UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 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, 2022
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. 001-07511

STATE STREET CORPORATION

(Exact name of registrant as specified in its charter)

MA	**04-2456637**
(State or other jurisdiction of incorporation)	(I.R.S. Employer Identification No.)
One Lincoln Street	
Boston, MA	**02111**
(Address of principal executive offices)	(Zip Code)

(617) 786-3000
(Registrant's telephone number, including area code)

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

Title of Each Class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $1 par value per share	STT	New York Stock Exchange
Depositary Shares, each representing a 1/4,000th ownership interest in a share of Fixed-to-Floating Rate Non-Cumulative Perpetual Preferred Stock, Series D, without par value per share	STT.PRD	New York Stock Exchange
Depositary Shares, each representing a 1/4,000th ownership interest in a share of Fixed-to-Floating Rate Non-Cumulative Perpetual Preferred Stock, Series G, without par value per share	STT.PRG	New York Stock Exchange

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 every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large accelerated filer	☒	Accelerated filer	☐	Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐						

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to § 240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). ☐

The aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the per share price ($61.65) at which the common equity was last sold as of the last business day of the registrant's most recently completed second fiscal quarter (June 30, 2022) was approximately $22.62 billion.

The number of shares of the registrant's common stock outstanding as of January 31, 2023 was 344,478,611.

Portions of the following documents are incorporated by reference into Parts of this Report on Form 10-K, to the extent noted in such Parts, as indicated below:

(1) The registrant's definitive Proxy Statement for the 2023 Annual Meeting of Shareholders to be filed pursuant to Regulation 14A on or before May 1, 2023 (Part III).

STATE STREET CORPORATION
ANNUAL REPORT ON FORM 10-K FOR THE YEAR ENDED
December 31, 2022

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Forward-Looking Statements

This Form 10-K, as well as other reports and proxy materials submitted by us under the Securities Exchange Act of 1934, registration statements filed by us under the Securities Act of 1933, our annual report to shareholders and other public statements we may make, may contain statements (including statements in our Management's Discussion and Analysis included in such reports, as applicable) that are considered “forward-looking statements” within the meaning of U.S. securities laws, including statements about our goals and expectations regarding our business, financial and capital condition, results of operations, strategies, cost savings and transformation initiatives, investment portfolio performance, ESG, human capital, climate, dividend and stock purchase programs, acquisitions, outcomes of legal proceedings, market growth, joint ventures and divestitures, client growth and new technologies, services and opportunities, as well as industry, governmental, regulatory, economic and market trends, initiatives and developments, the business environment and other matters that do not relate strictly to historical facts.

Terminology such as “plan,” “expect,” “intend,” “objective,” “forecast,” “outlook,” “believe,” “priority,” “anticipate,” “estimate,” “seek,” “may,” “will,” “trend,” “target,” “strategy” and “goal,” or similar statements or variations of such terms, are intended to identify forward-looking statements, although not all forward-looking statements contain such terms.

Forward-looking statements are subject to various risks and uncertainties, which change over time, are based on management's expectations and assumptions at the time the statements are made and are not guarantees of future results. Management's expectations and assumptions, and the continued validity of the forward-looking statements, are subject to change due to a broad range of factors affecting the U.S. and global economies, regulatory environment and the equity, debt, currency and other financial markets, as well as factors specific to State Street and its subsidiaries, including State Street Bank. Factors that could cause changes in the expectations or assumptions on which forward-looking statements are based cannot be foreseen with certainty and include the factors described under the headings "Risk Factors Summary" and "Risk Factors" and elsewhere in this Form 10-K, including under "Management's Discussion and Analysis."

Actual outcomes and results may differ materially from what is expressed in our forward-looking statements and from our historical financial results due to the factors discussed in this section and elsewhere in this Form 10-K or disclosed in our other SEC filings. Forward-looking statements in this Form 10-K should not be relied on as representing our expectations or assumptions as of any time subsequent to the time this Form 10-K is filed with the SEC. We undertake no obligation to revise our forward-looking statements after the time they are made. The factors discussed herein are not intended to be a complete statement of all risks and uncertainties that may affect our businesses. We cannot anticipate all developments that may adversely affect our business or operations or our consolidated results of operations, financial condition or cash flows.

Forward-looking statements should not be viewed as predictions and should not be the primary basis on which investors evaluate State Street. Any investor in State Street should consider all risks and uncertainties disclosed in our SEC filings, including our filings under the Securities Exchange Act of 1934, in particular our annual reports on Form 10-K, our quarterly reports on Form 10-Q and our current reports on Form 8-K, or registration statements filed under the Securities Act of 1933, all of which are accessible on the SEC's website at www.sec.gov or on the “Investor Relations” section of our corporate website at www.statestreet.com.

Risk Factors Summary

The following is a summary of material risks we are exposed to in the course of our business activities and which could have an adverse effect on our business or consolidated results of operations or financial condition. It does not contain all of the information that may be important to you and should be read together with the more detailed discussion of risks under the heading "Risk Factors," as well as elsewhere in this Form 10-K under the heading "Management's Discussion and Analysis."

Strategic Risks

- We are subject to intense competition, which could negatively affect our profitability;
- We are subject to significant pricing pressure and variability in our financial results and our AUC/A and AUM;
- Our development and completion of new products and services, including State Street Alpha℠ or State Street Digital℠, and the enhancement of our infrastructure required to meet increased regulatory and client expectations for resiliency and the systems and process re-engineering necessary to achieve improved productivity and reduced operating risk, involve costs, risks and dependencies on third parties;
- Our business may be negatively affected by our failure to update and maintain our technology infrastructure or as a result of a cyber-attack or similar vulnerability in our or business partners' infrastructure;

- Acquisitions, strategic alliances, joint ventures and divestitures, and the integration, retention and development of the benefits of our acquisitions, pose risks for our business; and
- Competition for qualified members of our workforce is intense, and we may not be able to attract and retain the highly skilled people we need to support our business.

Financial Market Risks

- We could be adversely affected by geopolitical, economic and market conditions;
- We have significant International operations and clients that can be adversely impacted by disruptions in European and Asian economies;
- Our investment securities portfolio, consolidated financial condition and consolidated results of operations could be adversely affected by changes in the financial markets;
- Our business activities expose us to interest rate risk;
- We assume significant credit risk of counterparties, who may also have substantial financial dependencies on other financial institutions, and these credit exposures and concentrations could expose us to financial loss;
- Our fee revenue represents a significant portion of our revenue and is subject to decline based on, among other factors, market and currency declines, investment activities and preferences of our clients and their business mix;
- If we are unable to effectively manage our capital and liquidity, our financial condition, capital ratios, results of operations and business prospects could be adversely affected;
- We may need to raise additional capital or debt in the future, which may not be available to us or may only be available on unfavorable terms; and
- If we experience a downgrade in our credit ratings, or an actual or perceived reduction in our financial strength, our borrowing and capital costs, liquidity and reputation could be adversely affected.

Compliance and Regulatory Risks

- Our business and capital-related activities, including common share repurchases, may be adversely affected by regulatory capital, credit (counterparty and otherwise) and liquidity standards and considerations;
- We face extensive and changing governmental regulation in the jurisdictions in which we operate, which may increase our costs and compliance risks and may affect our business activities and strategies;
- We are subject to enhanced external oversight as a result of the resolution of prior regulatory or governmental matters;
- Our businesses may be adversely affected by government enforcement and litigation;
- Our businesses may be adversely affected by increased political and regulatory scrutiny of ESG investing practices;
- Our efforts to improve our billing processes and practices are ongoing and may result in the identification of additional billing errors;
- Any misappropriation of the confidential information we possess could have an adverse impact on our business and could subject us to regulatory actions, litigation and other adverse effects;
- Our calculations of risk exposures, total RWA and capital ratios depend on data inputs, formulae, models, correlations and assumptions that are subject to change, which could materially impact our risk exposures, our total RWA and our capital ratios from period to period;
- Changes in accounting standards may adversely affect our consolidated results of operations and financial condition;
- Changes in tax laws, rules or regulations, challenges to our tax positions and changes in the composition of our pre-tax earnings may increase our effective tax rate;
- We could face liabilities for withholding and other non-income taxes, including in connection with our services to clients, as a result of tax authority examinations; and
- The transition away from LIBOR may result in additional costs and increased risk exposure.

Operational Risks

- Our internal control environment may be inadequate, fail or be circumvented, and operational risks could adversely affect our business and consolidated results of operations;
- Shifting operational activities to non-U.S. jurisdictions, changing our operating model and outsourcing portions of our operations to third parties may expose us to increased operational risk, geopolitical risk and reputational harm and may not result in

expected cost savings or operational improvements;

- Attacks or unauthorized access to our or our business partners' information technology systems or facilities, or disruptions to our or their operations, could result in significant costs, reputational damage and impacts on our business activities;
- Long-term contracts and customizing service delivery for clients expose us to pricing and performance risk;
- Our businesses may be negatively affected by adverse publicity or other reputational harm;
- We may not be able to protect our intellectual property or may infringe upon the rights of third parties;
- The quantitative models we use to manage our business may contain errors that could adversely impact our business and regulatory compliance;
- Our reputation and business prospects may be damaged if our clients incur substantial losses or are restricted in redeeming their interests in investment pools that we sponsor or manage;
- The impacts of climate change, and regulatory responses to such risks, could adversely affect us; and
- We may incur losses as a result of unforeseen events including terrorist attacks, natural disasters, the emergence of a new pandemic or acts of embezzlement.

PART I

ITEM 1. BUSINESS

OVERVIEW

State Street Corporation is one of the world's largest providers of financial services to institutional investors. We believe we are an essential partner to institutional investors and operate with the purpose of helping to create better outcomes for the world's investors and the people they serve. Our clients - asset managers and owners, insurance companies, official institutions, and central banks - rely on us to deliver solutions that support their goals across the investment life cycle.

Through our subsidiaries, including our principal banking subsidiary, State Street Bank and Trust Company, referred to as State Street Bank, we operate in more than 100 geographic markets worldwide, including the U.S., Canada, Latin America, Europe, the Middle East and Asia. We provide a broad range of financial products and services to institutional investors worldwide, with $36.74 trillion of AUC/A and $3.48 trillion of AUM as of December 31, 2022.

We had consolidated total assets of $301.45 billion, consolidated total deposits of $235.46 billion, consolidated total shareholders' equity of $25.19 billion and approximately 42,000 employees as of December 31, 2022.

State Street Corporation, referred to as the Parent Company, is a financial holding company organized in 1969 under the laws of the Commonwealth of Massachusetts. We conduct our business primarily through State Street Bank, which traces its beginnings to the founding of the Union Bank in 1792. State Street Bank's current charter was authorized by a special Act of the Massachusetts Legislature in 1891, and its present name was adopted in 1960. State Street Bank operates as a specialized bank, referred to as a trust or custody bank, that services and manages assets on behalf of its institutional clients.

Our executive offices are located at One Lincoln Street, Boston, Massachusetts 02111 (telephone (617) 786-3000). For purposes of this Form 10-K, unless the context requires otherwise, references to "State Street," "we," "us," "our" or similar terms mean State Street Corporation and its subsidiaries on a consolidated basis. The Parent Company is a source of financial and managerial strength to our subsidiaries.

ADDITIONAL INFORMATION

On the "Investor Relations" section of our corporate website at *www.statestreet.com*, we make available, free of charge, all reports we electronically file with, or furnish to, the SEC including our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, as well as any amendments to those reports, as soon as reasonably practicable after those documents have been filed with, or furnished to, the SEC. These documents are also accessible on the SEC's website at *www.sec.gov*. We have included the website addresses of State Street and the SEC in this report as inactive textual references only. Information on those websites (or any other) is not incorporated by reference in this Form 10-K.

We have Corporate Governance Guidelines, as well as written charters for the Examining and Audit Committee, the Executive Committee, the Human Resources Committee, the Nominating and Corporate Governance Committee, the Risk Committee and the Technology and Operations Committee of our Board of Directors, or Board, and a Code of Ethics for Senior Financial Officers, a Standard of Conduct for Directors and a Standard of Conduct for our employees. Each of these documents is posted on the "Investors" section of our website under "Corporate Governance."

We provide additional disclosures required by applicable bank regulatory standards, including supplemental qualitative and quantitative information with respect to regulatory capital (including market risk associated with our trading activities) and the LCR, summary results of semi-annual State Street-run stress tests that we conduct under the Dodd-Frank Act and resolution plan disclosures required under the Dodd-Frank Act. These additional disclosures are accessible on the “Investors” section of our website under "Filings & Reports."

We use acronyms and other defined terms for certain business terms and abbreviations, as defined on the acronyms list and glossary under Item 8 in this Form 10-K.

LINES OF BUSINESS

Our operations are organized into two lines of business: Investment Servicing and Investment Management, which are defined based on products and services provided.

Investment Servicing

Our Investment Servicing line of business provides a range of services to our clients. Through State Street Investment Services, State Street Global Markets℠, State Street Alpha, and State Street Digital, we provide investment services for institutional clients, including mutual funds, collective investment funds and other investment pools, corporate and public retirement plans, insurance companies, investment managers, foundations and endowments worldwide. Our financial services and products allow our large institutional investor clients to execute financial transactions on a daily basis in markets across the globe. As most institutional investors cannot economically or efficiently build their own technology and operational processes necessary to facilitate all of their global securities settlement needs, our primary role as a global trust and custody bank is to aid our clients to efficiently perform services associated with the clearing, settlement and execution of securities transactions and related payments.

Products under the Investment Servicing line of business include: back office products such as custody, accounting, regulatory reporting, investor services, performance and analytics; middle office products such as IBOR, transaction management, loans, cash, derivatives and collateral services, record keeping, client reporting and investment analytics; foreign exchange, brokerage and other trading services; securities finance and enhanced custody products; deposit and short-term investment facilities; loans and lease financing; investment manager and alternative investment manager operations outsourcing; performance, risk and compliance analytics; and financial data management to support institutional investors.

We provide some or all of the Investment Servicing integrated products and services to clients in the U.S. and in many other markets, including, among others, Australia, Brazil, Canada, Cayman Islands, Germany, Hong Kong, Ireland, Italy, Japan, Luxembourg, South Korea and the U.K. As of December 31, 2022, we serviced AUC/A of approximately $26.98 trillion in the Americas, approximately $7.14 trillion in Europe and the Middle East and approximately $2.63 trillion in the Asia-Pacific region.

Included within our Investment Servicing line of business is the Charles River Investment Management Solution, a technology offering which is designed to automate and simplify the institutional investment process across asset classes, from portfolio management and risk analytics through trading and post-trade settlement, with integrated compliance and managed data throughout. With the acquisition of CRD in 2018, we took the first step in building our front-to-back platform, State Street Alpha. In 2021, we further expanded State Street Alpha's technology offering with the acquisition of Mercatus, Inc., enabling the launch of Alpha for Private Markets. Today our State Street Alpha platform combines portfolio management, trading and execution, analytics and compliance tools, and advanced data aggregation and integration with other industry platforms and providers.

In 2021, we established State Street Digital to focus on the development of services related to digital assets and related technologies, such as blockchain, tokenization, cryptocurrency, and central bank digital currency, including the evolution of a new integrated business and digital operating model designed to support primarily our institutional clients' digital investment cycle.

Investment Management

Our Investment Management line of business, provides a broad range of investment management strategies and products for our clients through State Street Global Advisors. Our investment management strategies and products for equity, fixed income and cash assets, including core and enhanced indexing, multi-asset strategies, active quantitative and fundamental active capabilities and alternative investment strategies span the risk/reward spectrum of these investment products. Our AUM is currently primarily weighted to indexed strategies. In addition, we provide a breadth of services and solutions, including ESG investing, defined benefit and defined contribution products, and Global Fiduciary Solutions. State Street Global Advisors is also a provider of ETFs, including the SPDR® ETF brand. As of December 31, 2022, State Street Global Advisors had AUM of approximately $3.48 trillion.

Additional information about our lines of business is provided under “Line of Business Information” included in our Management's

Discussion and Analysis, and in Note 24 to the consolidated financial statements in this Form 10-K. Additional information about our non-U.S. activities is included in Note 26 to the consolidated financial statements in this Form 10-K.

COMPETITION

We operate in a highly competitive environment in all areas of our business globally. Our competitors include a broad range of financial institutions and servicing companies, including other custodial banks, deposit-taking institutions, investment management firms, insurance companies, mutual funds, broker/dealers, investment banks, benefits consultants, investment analytics businesses, business service and software companies, technology companies, data providers and information services firms. As our businesses grow and markets evolve, we may encounter increasing and new forms of competition around the world.

We believe that many key factors drive competition in the markets for our business. Technological expertise, economies of scale, required levels of capital, pricing, quality and scope of services, and sales and marketing are critical to our Investment Servicing line of business. For our Investment Management line of business, key competitive factors include expertise, experience, availability of related service offerings, quality of service, price, efficiency of our products and services, and performance.

Our success and competitive position may depend on our ability to develop and market new and innovative services, to adopt or develop new technologies, to implement efficiencies into our operational processes, to bring new services to market in a timely fashion at competitive prices, to integrate existing and future products and services effectively into State Street Alpha and State Street Digital, to continue to expand our relationships with existing clients, and to attract new clients.

We are a G-SIB and are subject to extensive regulation and supervision with respect to our operations and activities. Not all of our competitors have similarly been designated as systemically important nor are all of them subject to the same degree of regulation as a bank or financial holding company, and therefore some of our competitors may not be subject to the same limitations, requirements and standards with respect to their operations and activities. Most other financial institutions designated as systemically important have substantially greater financial resources and a broader base of operations than we do and are, consequently, in a better competitive position to manage and bear the costs of this enhanced regulatory requirement. See "Supervision and Regulation" in this Item for more information.

HUMAN CAPITAL

Our human capital strategy is a meaningful driver of our overall enterprise strategy and our long-term performance. Our employees drive the company's value proposition, innovate better ways to serve our clients and act as custodians of our reputation. We seek to empower our employees by providing development and learning opportunities to help each person reach their full potential, by promoting an inclusive, diverse and equitable workplace and by improving organizational effectiveness.

In 2022, as the impact of the COVID-19 pandemic moderated globally, we learned important lessons regarding the opportunities presented by both remote work and being present in the office. We applied these lessons to our hybrid model of working, helping to shape when and how employees work to support productivity and client engagement. Due to the net impact of hiring (primarily in our global hubs in India and Poland) during 2022 compared to 2021, our workforce at December 31, 2022 was up approximately 9% compared to December 31, 2021 at approximately 42,000 employees, 71% of whom are located outside the U.S. Overall headcount growth in 2022 reflected operational support for new business growth segments, as well as technology investments and in-sourcing.

The Board of Directors' Human Resources Committee oversees our human capital management strategy, and receives regular updates on matters such as recruitment, retention, development, culture and inclusion, diversity and equity initiatives. Our Enterprise Talent Management Committee, which consists of senior executives, provides leadership, input and advice on our global talent-related initiatives to support achievement of our strategic priority to continually seek to become a higher-performing organization and a destination for talent.

Workforce Engagement and Culture

Our culture and values help to define us as a company. Employees are expected to carry out their work in alignment with the following culture traits:

- Choose to Own It;
- Break Through Silos;
- Deliver Results with Integrity and Speed;
- Do Better Every Day; and
- Care for Our Colleagues, Clients and Community.

We aim to promote strong levels of employee commitment and connection to the company by highlighting our shared culture traits and the behaviors that drive our business strategy, such as through our Risk Excellence Awards, which recognize and reward employees who demonstrate exemplary risk management performance. We

believe that a culture where employees feel valued, engaged and empowered makes State Street a more desirable place to work, helps us attract key talent and retain employees as they grow in their careers, fostering an environment that enhances each individual's productivity and professional satisfaction.

We use our compensation program to incentivize our executives to role-model these shared culture traits. In determining executive compensation, we first measure enterprise-level performance, including leadership- and diversity-related performance. We then evaluate executives' performance against individual objectives derived from our corporate goals, including their performance advancing and role-modeling the critical leadership behaviors and culture traits that drive our business strategy.

The integrity and ethical decision-making of our employees is also paramount for our culture. We encourage employees to speak up if they see behavior that is inconsistent with our Standard of Conduct, culture or values, and we regularly communicate the multiple channels provided for them to do so, including our Speak Up Line (used to anonymously report concerns about State Street to State Street's Lead Director), Global Human Resources team and other avenues. We want our employees to know their opinions are valued, to feel comfortable asking questions and raising concerns, to feel truly appreciated for acting responsibly by voicing concerns, and to have no fear of retaliation. Encouraging professional challenge and debate is a key leadership behavior we use in evaluating candidates for executive promotions. Our approach is to promote ethical conduct by treating minor policy breaches as learning opportunities, and treating major policy breaches and misconduct promptly, professionally and seriously.

Attracting and Retaining Top Talent

Attracting and retaining top talent is critical to our business strategy, especially in a particularly competitive hiring environment such as in 2022. As such, we carefully monitor our hiring, promotion and turnover rates and implement programs to help retain our best employees. Overall headcount grew in 2022 reflecting operational support for new business and growth segments, as well as technology investments and in-sourcing. We continue to see success redeploying employees via an internal talent marketplace that we launched during 2020. The talent marketplace is an innovative way for our employees to access new roles, skills and opportunities, and for managers to recruit internal talent. By broadening every employee's access to roles and by showing managers the full breadth of talent at State Street, our goal is to provide better pathways to long-term career success at State Street.

We regularly monitor our compensation program to maintain competitiveness. Our overall aim with respect to compensation is to reward high performance, motivate employees and provide competitive incentive opportunities. Compensation typically comprises fixed compensation, which reflects individual skills and abilities relative to role requirements, and variable compensation, which is designed to link total compensation to organizational, business line, risk management and individual performance. Our compensation program is intended to drive our business strategy by differentiating pay based on performance.

Professional development and employee learning are also key elements of our talent retention strategy. We seek to align our learning and development programs with our corporate strategy by offering skill enhancement opportunities addressing the rapidly changing, technology-centric demands of the financial services industry. We also provide professional development opportunities and new roles for key talent, which we believe helps to deepen our employees' skillsets and provides them with a broader perspective on the company.

Inclusion, Diversity and Equity

Inclusion, diversity and equity have long been a focus for our company and as part of that commitment, we established enterprise-wide five-year diversity goals for gender (globally) and employees of color (United States only) in 2017. We publish our diversity goals and progress against them on our website because we believe that maintaining transparency about where we are and where we have more work to do is an important part of holding ourselves accountable. In 2022, we made progress in seven out of the eight goals compared to 2021. Although we fell short of achieving all of our five-year diversity goals, we achieved two of our eight goals and are within one percentage point of three others. We are proud of our progress and continue to integrate key learnings as we prepare to establish our next set of goals.

We are also working to accelerate progress via our "10 Actions Against Racism and Inequality," which we announced in July 2020. These concrete actions include goals to increase our Black and Latinx representation among our senior leaders and to increase our spend with diverse suppliers, while addressing racial and social injustice and inequity by enhancing inclusion and diversity within our own company and advocating for the same in our industry and communities. We believe that our strength comes from our diversity, including with respect to race, gender, LGBTQ+ identity, disability, and Veteran status, and that attracting and hiring the best person for the job is core to our ability to be an essential partner to our clients. We track our progress against the objectives outlined in the "10 Actions" and publicly share our progress on our website to help hold ourselves accountable. In 2022, we also published on our website our first annual pay equity disclosure to

provide transparency to our employees, clients and investors and to hold ourselves accountable to the principles of inclusion, diversity and equity.

At the end of 2022, our global workforce was approximately 55% male and 45% female, and women represented approximately 35% of our leadership (defined as senior vice president level and above). In the U.S., approximately 36% of our workforce self-identified as employees of color. We also publish our EEO-1 demographic data on our website.

Organizational Effectiveness

Driving improvements in both individual and organizational productivity is a key ongoing focus of our overall human capital management strategy. We seek to enhance the value each employee is able to contribute by investing in new technologies, designing more effective organizational structures, improving processes and operating models, optimizing our global footprint, and aligning incentives to outcomes. We believe that improving the productivity of our workforce will yield more engaged and higher performing employees and optimize our ability to service our clients, grow revenues and improve operating margin performance.

Community Engagement

We are proud of our impact on communities around the world through employee volunteering and the financial support of State Street Foundation to non-profit organizations. We provide training and support for State Street employees to serve as members of boards of directors of charitable organizations, developing their leadership skills through community service. Our skills-based volunteer program gives employees the opportunity to strengthen their communities while also developing their professional skills in alignment with our overall human capital management strategy. Additionally, our matching gifts program recognizes the employees' contributions in the community by monetizing volunteer time, matching donations and supporting employee fundraising efforts. We believe that being a good corporate citizen drives employee engagement, enhances our reputation with clients and potential employees, improves brand recognition and builds public trust.

SUPERVISION AND REGULATION

We are registered with the Federal Reserve as a bank holding company pursuant to the Bank Holding Company Act of 1956. The Bank Holding Company Act generally limits the activities in which bank holding companies and their non-banking subsidiaries may engage to managing or controlling banks and to a range of activities that are considered to be closely related to banking. Bank holding companies that have elected to be treated as financial holding companies, such as the Parent Company, may engage in a broader range of activities considered to be "financial in nature." The regulatory limits on our activities also apply to non-banking entities that we are deemed to “control” for purposes of the Bank Holding Company Act, which may include companies of which we own or control 5% or more of a class of voting shares. The Federal Reserve may order a bank holding company to terminate any activity, or its ownership or control of a non-banking subsidiary, if the Federal Reserve finds that the activity, ownership or control constitutes a serious risk to the financial safety, soundness or stability of a banking subsidiary or is inconsistent with sound banking principles or statutory purposes. The Bank Holding Company Act also requires a bank holding company to obtain prior approval of the Federal Reserve before it acquires substantially all the assets of any bank, or ownership or control of more than 5% of the voting shares of any bank.

The Parent Company has elected to be treated as a financial holding company and, as such, may engage in a broader range of non-banking activities than permitted for bank holding companies and their subsidiaries that have not elected to become financial holding companies. Financial holding companies may engage directly or indirectly, either de novo or by acquisition, in activities that are defined by the Federal Reserve to be financial in nature, provided that the financial holding company gives the Federal Reserve after-the-fact notice of the new activities. Activities defined to be financial in nature include, but are not limited to: providing financial or investment advice; underwriting; dealing in or making markets in securities; making merchant banking investments, subject to significant limitations; and any activities previously found by the Federal Reserve to be closely related to banking. In order to maintain our status as a financial holding company, we and each of our U.S. depository institution subsidiaries are expected to be well capitalized and well managed, as defined in applicable regulations and determined in part by the results of regulatory examinations, and must comply with Community Reinvestment Act obligations. Failure to maintain these standards may result in restrictions on our activities and may ultimately permit the Federal Reserve to take enforcement actions against us and restrict our ability to engage in activities defined to be financial in nature. Currently, under the

Bank Holding Company Act, we may not be able to engage in new activities or acquire shares or control of other businesses.

In response to the 2008 financial crisis, as well as other factors, such as technological and market changes, both the scope of the laws and regulations and the intensity of the supervision to which our business is subject has increased. Regulatory enforcement and fines have also increased across the banking and financial services sector. Many of these changes have occurred as a result of the Dodd-Frank Act and its implementing regulations, most of which are now in place. Subsequently, in May 2018, the Economic Growth, Regulatory Relief and Consumer Protection Act (EGRRCPA) was enacted. The EGRRCPA's revisions to the U.S. financial regulatory framework have altered certain laws and regulations applicable to us and other major financial services firms. Under the current administration, changes in key personnel at the federal banking agencies that regulate such banking organizations, including the Federal Reserve, the FDIC and the OCC (U.S. Agencies), may result in increased prudential and conduct oversight, more extensive regulatory requirements, changing interpretations of existing rules and guidelines, and potentially more stringent enforcement and more severe penalties. Irrespective of any regulatory change, we expect that our business will remain subject to extensive regulation and supervision.

In addition, increased regulatory requirements and initiatives have been and are being implemented globally with respect to financial institutions, including the implementation of the Basel III rule (refer to “Regulatory Capital Adequacy and Liquidity Standards” in this “Supervision and Regulation” section and under "Capital" in “Financial Condition” in our Management's Discussion and Analysis in this Form 10-K for a discussion of Basel III), the Capital Requirements Directive (CRD VI) and Capital Requirements Regulation (CRR III) and the E.U. Digital Operational Resilience Act (DORA), as well as proposals for amending the Alternative Investment Fund Managers Directive and under the Capital Markets Union Action Plan.

Many aspects of our business are subject to regulation by other U.S. federal and state governmental and regulatory agencies and self-regulatory organizations (including securities exchanges), and by non-U.S. governmental and regulatory agencies and self-regulatory organizations. Some aspects of our public disclosure, corporate governance principles and internal control systems are subject to the Sarbanes-Oxley Act of 2002 (SOX), the Dodd-Frank Act and regulations and rules of the SEC and the New York Stock Exchange.

Regulatory Capital Adequacy and Liquidity Standards

Basel III Rule

We, as an advanced approaches banking organization, are subject to the Basel III framework in the U.S. The provisions of the Basel III rule related to minimum capital requirements, regulatory capital buffers and deductions and adjustments to regulatory capital were fully implemented as of January 1, 2019. We are also subject to the market risk capital rule jointly issued by U.S. banking regulators to implement the changes to the market risk capital framework in the U.S.

As required by the Dodd-Frank Act, we, as an advanced approaches banking organization, are subject to a "capital floor," also referred to as the Collins Amendment, in the assessment of our regulatory capital adequacy, including the capital conservation buffer and countercyclical capital buffer described below in this "Supervision and Regulation" section. Our risk-based capital ratios for regulatory assessment purposes are the lower of each ratio calculated under the standardized approach and the advanced approaches.

On September 7, 2022, the Federal Reserve's Vice Chair For Supervision stated that the Federal Reserve was undertaking a holistic review of U.S. capital requirements that will help the regulator consider adjustments to the current framework. In addition, on September 9, 2022, the U.S. Agencies reaffirmed their commitment to implementing revised regulatory capital requirements that align with the final set of Basel III standards (Basel IV package) issued by the Basel Committee on Banking Supervision in December 2017. They intend to seek public comments on a joint proposed rule in the coming months.

Risk Weighted Assets

The Basel III rule provides two frameworks for the calculation of RWA for purposes of bank regulatory compliance: the “standardized” approach and the “advanced” approaches, which are applicable to advanced approaches banking organizations, like us.

The standardized approach prescribes standardized risk weights for certain on- and off-balance sheet exposures in the calculation of RWA. The advanced approaches consist of the Advanced Internal Ratings-Based Approach (AIRB) used for the calculation of RWA related to credit risk and the Advanced Measurement Approach (AMA) used for the calculation of RWA related to operational risk.

In November 2019, the U.S. Agencies issued a final rule that, among other things, implements the standardized approach for counterparty credit risk (SA-CCR), a methodology for calculating the exposure amount for derivative contracts. Under the

final rule, beginning on January 1, 2022, we have the option to use the SA-CCR or the Internal Model Methodology (IMM) to measure the exposure amount of our cleared and uncleared derivative transactions under our advanced approaches calculation. We have elected to use the SA-CCR for purposes of our advanced approaches capital calculations. Since January 1, 2022, we are required to determine the amount of these exposures using the SA-CCR under our standardized approach capital calculation.

Minimum Risk-Based Capital Requirements

Among other things, the Basel III rule (as amended) requires:

- a minimum CET1 risk-based capital ratio of 4.5% and a minimum SLR of 3% for advanced approaches banking organizations;
- a minimum Tier 1 risk-based capital ratio of 6%;
- a minimum total capital ratio of 8%; and
- the stress capital and countercyclical capital buffers, referenced below, as well as a G-SIB surcharge and the enhanced SLR (which acts as an SLR buffer) described in "Capital" in "Financial Condition" in our Management's Discussion and Analysis in this Form 10-K.

Under the Basel III rule, our total regulatory capital is composed of three tiers: CET1 capital, Tier 1 capital (which includes CET1 capital), and Tier 2 capital. The total of Tier 1 and Tier 2 capital, adjusted as applicable, is referred to as total regulatory capital.

CET1 capital is composed of core capital elements, such as qualifying common shareholders' equity and related surplus plus retained earnings and the cumulative effect of foreign currency translation plus net unrealized gains (losses) on debt and equity securities classified as AFS, less treasury stock and less goodwill and other intangible assets, net of related deferred tax liabilities. Tier 1 capital is composed of CET1 capital plus additional Tier 1 capital instruments which, for us, includes four series of preferred equity outstanding as of December 31, 2022. Tier 2 capital includes certain eligible subordinated long-term debt instruments. Total regulatory capital consists of Tier 1 capital and Tier 2 capital.

Certain other items, if applicable, must be deducted from Tier 1 and Tier 2 capital, including certain investments in the capital of unconsolidated banking, financial and insurance entities and the amount of expected credit losses that exceeds recorded allowances for loan and other credit losses. Expected credit losses are calculated for wholesale credit exposures by formula in conformity with the Basel III rule.

G-SIB Surcharge

The eight U.S. bank holding companies deemed to be G-SIBs, including us, are required to calculate the G-SIB surcharge annually according to two methods, and be bound by the higher of the two:

- Method 1: Assesses systemic importance based upon five equally-weighted components: size, interconnectedness, complexity, cross-jurisdictional activity and substitutability; or
- Method 2: Alters the calculation from Method 1 by factoring in a short-term wholesale funding score in place of substitutability and applying a fixed coefficient to each of the five components.

Method 2 is the binding methodology for us as of December 31, 2022. Our current G-SIB surcharge, through December 31, 2023, is 1.0%. Based upon preliminary calculations using data as of December 31, 2022, we currently anticipate that our surcharge will remain at 1% through December 31, 2024; however, that calculation has not yet been finalized and is subject to many financial, balance sheet, market and other factors, and consequently there is a risk that a higher G-SIB surcharge of 1.5% will result from the final calculation. As noted above, our G-SIB surcharge must be calculated annually, and year-over-year changes in our Method 1 or Method 2 G-SIB scores may therefore result in changes to our G-SIB surcharge. If our Method 1 or Method 2 score changes year-over-year such that we would become subject to a higher surcharge, the higher surcharge would not become effective for two years from the "as of" date (e.g., a higher surcharge calculated as of December 31, 2022 would not become effective until January 1, 2025). If, however, our Method 1 or Method 2 score changes year-over-year such that we would become subject to a lower surcharge, we would be subject to the lower surcharge beginning one full year from the "as of" date (e.g., a lower surcharge calculated as of December 31, 2022 would become effective January 1, 2024).

Stress Capital Buffer

On March 4, 2020, the U.S. Agencies issued the SCB final rule that replaces, under the standardized approach, the fixed capital conservation buffer (2.5%) with an SCB calculated as the difference between the institution's starting and lowest projected CET1 ratio under the severely adverse scenario of the Federal Reserve's supervisory stress test plus planned common stock dividend payments (as a percentage of RWA) from the fourth through seventh quarter of the supervisory stress testing planning horizon. Based on our results from the 2022 supervisory stress test, our SCB for the period of October 1, 2022 through September 2023 is set at the minimum of 2.5% of RWA. For additional information about the SCB final rule, refer to "Capital Planning, Stress Tests and Dividends" in this "Supervision and Regulation" section.

Under the SCB final rule, a banking organization would be able to make capital distributions and discretionary bonus payments without specified quantitative limitations (although subject to other potential regulatory constraints, such as supervisory limitations), as long as it maintains its required SCB plus the applicable G-SIB surcharge (plus any potentially applicable countercyclical capital buffer) over the minimum required risk-based capital ratios and as long as it satisfies all leverage based capital requirements and buffers. From time to time, under certain economic conditions, banking regulators may establish a minimum countercyclical capital buffer up to a maximum of 2.5% of total RWA. The countercyclical capital buffer was initially set by banking regulators at zero, and has not been increased since its inception.

Assuming a countercyclical buffer of 0%, the minimum capital ratios as of January 1, 2023, including a capital conservation buffer and an SCB of 2.5% for advanced and standardized approaches, respectively, and a G-SIB surcharge of 1.0%, are 8.0% for CET1 capital, 9.5% for Tier 1 risk-based capital and 11.5% for total risk-based capital, in order for us to make capital distributions and discretionary bonus payments without limitation.

Leverage Ratios

We are subject to a minimum Tier 1 leverage ratio and a supplementary leverage ratio. The Tier 1 leverage ratio is based on Tier 1 capital and adjusted quarterly average on-balance sheet assets. The Tier 1 leverage ratio differs from the SLR primarily in that the denominator of the Tier 1 leverage ratio is a quarterly average of on-balance sheet assets, while the SLR additionally includes off-balance sheet exposures. We must maintain a minimum Tier 1 leverage ratio of 4%.

We are also subject to a minimum SLR of 3%, and as a U.S. G-SIB, we must maintain a 2% SLR buffer in order to avoid any limitations on distributions to shareholders and discretionary bonus payments to certain executives. If we do not maintain this buffer, limitations on these distributions and discretionary bonus payments would be increasingly stringent based upon the extent of the shortfall.

In November 2019, pursuant to the EGRRCPA, the U.S. Agencies adopted a final rule that excludes central bank deposits from a custodial banking organization's total leverage exposure for purpose of calculating the SLR and which is not applicable to total leverage exposure under the calculation of Tier 1 leverage. This exclusion is equal to the lesser of (i) the total amount of funds the custodial banking organization and its consolidated subsidiaries have on deposit at qualifying central banks and (ii) the total amount of client funds on deposit at the custodial banking organization that are linked to fiduciary or custodial and safekeeping accounts. The rule became effective on April 1, 2020. For the quarter ended December 31, 2022, we excluded $78.5 billion of average balances held on deposit at central banks from the denominator used in the calculation of our SLR based on this custodial banking exclusion. The TLAC and LTD that State Street is required to hold under SLR-based requirements reflect the exclusion of certain central bank balances as a consequence of the rule.

The SA-CCR final rule adopted in November 2019, which went into effect for us on January 1, 2022, also requires us to incorporate the SA-CCR into the calculation of our total leverage exposure for the purpose of calculating SLR.

In 2018, the Federal Reserve proposed modifications to the SLR that would replace the current 2% SLR buffer applicable to us with an SLR buffer equal to 50% of our applicable G-SIB capital surcharge. The Federal Reserve has not finalized these proposed modifications.

Selected Recent Regulatory Developments Summary

Final Rule Issued	Final Rule Effective Date	Description
August 2020	January 1, 2021	In March 2020, the U.S. Agencies issued an interim final rule (followed by a final rule in August 2020) that revised the definition of eligible retained income for all U.S. banking organizations, including us. The revised definition of eligible retained income makes any automatic limitations on capital distributions that could apply to us under the U.S. Agencies' capital or TLAC rules take effect on a more gradual basis in the event that our capital, leverage or TLAC ratios were to decline below regulatory requirements, including regulatory capital, leverage or TLAC buffers, as applicable.
October 2020	April 1, 2021	The U.S. Agencies issued a final rule that requires us and State Street Bank to make deductions from regulatory capital for investments in certain unsecured debt instruments issued by bank holding companies and U.S. intermediate holding companies of foreign banks that are subject to the Federal Reserve's TLAC and LTD requirements, as well as foreign G-SIBs.
October 2020	July 1, 2021	The U.S. Agencies issued a final rule implementing the Basel Committee on Banking Supervision's (BCBS) NSFR in the United States, which applies to us and State Street Bank. The final rule requires large banking organizations to maintain an amount of available stable funding, which is a weighted measure of a company's funding sources over a one-year time horizon, calculated by applying standardized weightings to the company's equity and liabilities based on their expected stability, that is no less than the amount of required stable funding, which is calculated by applying standardized weightings to assets, derivatives exposures and certain other items based on their liquidity characteristics.
November 2019	January 1, 2022	The U.S. Agencies issued a final rule that, among other things, implements the SA-CCR, a methodology for calculating the exposure amount for derivative contracts under the U.S. regulatory capital rules. Under the final rule, we have the option to use the SA-CCR or the Internal Model Methodology (IMM) to measure the exposure amount of our cleared and uncleared derivative transactions under our advanced approaches calculation. We have elected to use the SA-CCR for purposes of our advanced approaches capital calculations. We are required to determine the amount of these exposures using the SA-CCR under our standardized approach capital calculation. Due to the nature of our trading activities, the final rule is likely to have a greater proportional impact on our RWA than on some of our G-SIB peers. In addition, under the final rule we are required to use a simplified formula to determine the RWA amount of our central counterparty default fund contributions. The final rule also requires us to incorporate the SA-CCR into the calculation of our total leverage exposure for the purpose of calculating SLR.

As a G-SIB, we are subject to enhanced supervision and prudential standards. Our status as a G-SIB has also resulted in heightened prudential and conduct expectations of our U.S. and international regulators with respect to our capital and liquidity management and our compliance and risk oversight programs. These heightened expectations have increased our regulatory compliance costs, including personnel, technology and systems, as well as significant additional implementation and related costs to enhance our regulatory compliance programs. Regulatory compliance requirements are anticipated to remain at least at the elevated levels we have experienced over the past several years.

Failure to meet current and future regulatory capital requirements could subject us to a variety of enforcement actions, including the termination of State Street Bank's deposit insurance by the FDIC, and to certain restrictions on our business, including those that are described above in this “Supervision and Regulation” section.

Not all of our competitors have similarly been designated as systemically important nor are all of them subject to the same degree of regulation as a bank or financial holding company, and therefore some of our competitors may not be subject to the same additional capital requirements.

For additional information about our regulatory capital position and our regulatory capital adequacy, as well as current and future regulatory capital requirements, refer to "Capital" in “Financial Condition" in our Management's Discussion and Analysis, and Note 16 to the consolidated financial statements in this Form 10-K.

Total Loss-Absorbing Capacity

The Federal Reserve has rules on TLAC, LTD and clean holding company requirements for U.S. domiciled G-SIBs, such as us. The requirements are intended to improve the resiliency and resolvability of certain U.S. banking organizations through enhanced prudential standards. The TLAC rule imposes: (1) external TLAC requirements (i.e., combined eligible Tier 1 regulatory capital and LTD); (2) separate external LTD requirements; and (3) clean holding company requirements that impose restrictions on certain types of liabilities and limit non-TLAC related third party liabilities to 5% of external TLAC.

Among other things, the TLAC rule requires us to comply with minimum requirements for external TLAC and external LTD. Specifically, as of January 2023, we must hold

(1) combined eligible Tier 1 regulatory capital and LTD in the amount equal to the greater of 21.5% of total RWA (18.0% minimum plus a 2.5% capital conservation buffer plus a G-SIB surcharge calculated for these purposes under Method 1 of 1.0% plus any applicable counter-cyclical buffer, which is currently 0%) and 9.5% of total leverage exposure (7.5% minimum plus the enhanced SLR buffer of 2.0%), as defined by the SLR rule; and

(2) qualifying external LTD equal to the greater of 7.0% of RWA (6.0% minimum plus a G-SIB surcharge calculated for these purposes under Method 2 of 1.0%) and 4.5% of total leverage exposure, as defined by the SLR rule.

Additionally, certain large banking organizations, such as us and State Street Bank, are required to make deductions from regulatory capital for investments in certain unsecured debt instruments issued by bank holding companies and U.S. intermediate holding companies of foreign banks that are subject to the Federal Reserve's TLAC and LTD requirements, as well as foreign G-SIBs.

Liquidity Coverage Ratio and Net Stable Funding Ratio

In addition to capital standards, the Basel III framework introduced two quantitative liquidity standards: the LCR and the NSFR.

We are subject to the rule issued by the U.S. Agencies implementing the BCBS's LCR in the U.S. The LCR is intended to promote the short-term resilience of internationally active banking organizations, like us, to improve the banking industry's ability to absorb shocks arising from market stress over a 30 calendar day period and improve the measurement and management of liquidity risk.

The LCR measures an institution's HQLA against its net cash outflows under a prescribed stress environment. We report LCR to the Federal Reserve daily and are required to calculate and maintain an LCR that is equal to or greater than 100%. In addition, we publicly disclose certain qualitative and quantitative information about our LCR consistent with the requirements of the Federal Reserve's final rule.

Compliance with the LCR has required that we maintain an investment portfolio that contains an adequate amount of HQLA. In general, HQLA investments generate a lower investment return than other types of investments, resulting in a negative impact on our NII and our NIM. In addition, the level of HQLA we are required to maintain under the LCR is dependent upon our client relationships and the nature of services we provide, which may change over time. Deposits resulting from certain services provided ("operational deposits") are treated as more resilient during periods of stress than other deposits. As a result, if balances of operational deposits increased relative to our total client deposit base, we would expect to require less HQLA in order to maintain our LCR. Conversely, if balances of operational deposits decreased relative to our total client deposit base, we would expect to require more HQLA. On May 5, 2020, the U.S. Agencies issued a rule that modifies the LCR rule to neutralize the impact on LCR of the advances made by the MMLF (and Paycheck Protection Liquidity Facility program) and the exposures securing such advances.

In October 2020, the U.S. Agencies issued a final rule implementing the BCBS's NSFR in the United States. The final rule requires large banking organizations to maintain an amount of available stable funding, which is a weighted measure of a company's funding sources over a one-year time horizon, calculated by applying standardized weightings to the company's equity and liabilities based on their expected stability, that is no less than the amount of required stable funding, which is calculated by applying standardized weightings to assets, derivatives exposures and certain other items based on their liquidity characteristics. As a U.S. G-SIB, we are required to maintain an NSFR that is equal to or greater than 100%. The final rule became effective as of July 1, 2021 and requires us to publicly disclose our quarterly NSFR on a semiannual basis beginning in 2023.

Capital Planning, Stress Tests and Dividends

Pursuant to the Dodd-Frank Act, the Federal Reserve has adopted capital planning and stress test requirements for large bank holding companies, including us, which form part of the Federal Reserve's annual stress testing and capital planning framework. The Federal Reserve conducts its own stress tests of our business operations using supervisory models, referred to as supervisory stress tests, the results of which it uses to calibrate our annual SCB, subject to

a minimum of 2.5%. In addition, under the Federal Reserve's capital plan rule, we must conduct periodic stress testing of our business operations and submit an annual capital plan to the Federal Reserve, taking into account the results of separate stress tests designed by us and by the Federal Reserve. The Federal Reserve conducts a qualitative assessment of our capital plan as part of the annual supervisory process known as CCAR, to evaluate the strength of our capital planning practices, including our ability to identify, measure, and determine the appropriate amount of capital for our risks, and controls and governance supporting capital planning.

The Federal Reserve's final rule to integrate its annual capital planning and stress testing requirements with certain ongoing regulatory capital requirements applies to certain bank holding companies, including us. The final rule introduced an SCB and related changes to the capital planning and stress testing processes. The standardized approach SCB equals the greater of (i) 2.5%; and (ii) the maximum decline in our CET1 capital ratio under the severely adverse scenario over the supervisory stress test measurement period, plus the ratio of (a) the sum of the dollar amount of our planned common stock dividends for the fourth through seventh quarters of the supervisory stress test projection period to (b) our projected RWA for the quarter in which our projected CET1 capital ratio reaches its minimum in the supervisory stress test. Risked-based regulatory capital requirements under the standardized approach include the SCB, as summarized above, as well as our G-SIB capital surcharge and any applicable countercyclical capital buffer.

The final rule made related changes to capital planning and stress testing processes for bank holding companies subject to the SCB requirement. In particular, the final rule assumes that bank holding companies maintain a constant level of assets and RWA throughout the supervisory stress test projection period. In addition, under the final rule the supervisory stress test no longer assumes that bank holding companies make all nine quarters of planned capital distributions under stress, although the SCB incorporates the dollar amount of four quarters of planned common stock dividends, as described above.

The final rule did not change regulatory capital requirements under the advanced approaches, the Tier 1 leverage ratio or the SLR.

Our SCB requirement was 2.5% for the period from October 1, 2021 through September 30, 2022. On June 27, 2022, we were notified by the Federal Reserve of the results from the 2022 supervisory stress test, including our preliminary SCB of 2.5%. Our SCB calculated under the 2022 supervisory stress test was well below the 2.5% minimum, resulting in an SCB at that floor, which went into effect starting October 1, 2022 and which will be effective through September 30, 2023.

Although the final SCB rule changed the effects of the CCAR and supervisory stress test processes so that the SCB, rather than CCAR, is the source of our stress-based capital requirements, we continue to be subject to CCAR's capital plan requirements and the supervisory assessment of our capital planning activities. Under the capital planning requirements, our annual capital plan must include a description of all of our planned capital actions over a nine-quarter planning horizon, including any capital qualifying instruments, any capital distributions, such as payments of dividends on, or repurchases of, our stock, and any similar action that the Federal Reserve determines could affect our consolidated capital. The capital plan must include a discussion of how we will maintain capital above the minimum regulatory capital ratios, including the minimum ratios under the Basel III rule, and serve as a source of strength to State Street Bank under supervisory stress scenarios. Changes in our strategy, merger or acquisition activity or unanticipated uses of capital could result in a change in our capital plan and its associated capital actions, including capital raises or modifications to planned capital actions, such as repurchases of our stock, and may require resubmission of the capital plan to the Federal Reserve if, among other reasons, we would not meet our regulatory capital requirements after making the proposed capital distribution.

In addition to its stress testing and capital planning requirements, the Federal Reserve has the authority to prohibit or to limit the payment of dividends, the repurchase of common stock, or other capital actions that reduce capital by the banking organizations it supervises, including the Parent Company and State Street Bank, if, in the Federal Reserve's opinion, the capital action would constitute an unsafe or unsound practice in light of the financial condition of the banking organization. All of these policies and other requirements could affect our ability to pay dividends and repurchase our stock or require us to provide capital assistance to State Street Bank and any other banking subsidiary. Our common stock and other stock dividends, including the declaration, timing and amount thereof, remain subject to consideration and approval by our Board of Directors at the relevant times.

The Federal Reserve, under the Dodd-Frank Act, previously required us to conduct semi-annual State Street-run stress tests and to publicly disclose the summary results of our State Street-run stress tests under the severely adverse economic scenario. We are also required to undergo an annual supervisory stress test conducted by the Federal Reserve. The EGRRCPA modifies certain aspects of these stress-testing requirements, reducing the

number of scenarios in the Federal Reserve's supervisory stress test from three to two and modifying our obligation to perform company-run stress-tests from semi-annually to annually. The Federal Reserve adopted a final rule in October 2019 that, among other things, implemented this modification.

The Volcker Rule

We are subject to the Volcker Rule and implementing regulations. The Volcker Rule prohibits banking entities, including us and our affiliates, from engaging in certain prohibited proprietary trading activities, as defined in the Volcker Rule regulations, subject to exemptions for market-making related activities, risk-mitigating hedging, underwriting and certain other activities. The Volcker Rule also requires banking entities to either restructure or divest certain ownership interests in, and relationships with, covered funds (as such terms are defined in the Volcker Rule regulations).

The Volcker Rule regulations require banking entities to establish extensive programs designed to promote compliance with the restrictions of the Volcker Rule. We have established a compliance program that we believe complies with the Volcker Rule regulations as currently in effect. Our compliance program restricts our ability in the future to service certain types of funds, in particular covered funds for which State Street Global Advisors acts as an advisor and certain types of trustee relationships. Consequently, Volcker Rule compliance entails both the cost of a compliance program and loss of certain revenue and future opportunities.

Enhanced Prudential Standards

The Dodd-Frank Act, as amended by the EGRRCPA, establishes a systemic risk regime to which large bank holding companies with $100 billion or more in consolidated assets, such as us, are subject. The Federal Reserve is required to tailor the application of the enhanced prudential standards to bank holding companies based on their size, complexity, risk profile and other factors. U.S. G-SIBs, such as us, are expected to remain subject to the most stringent requirements, including heightened capital, leverage, liquidity and risk management requirements and single-counterparty credit limits (SCCL).

The FSOC can recommend prudential standards, reporting and disclosure requirements for SIFIs to the Federal Reserve, and must approve any finding by the Federal Reserve that a financial institution poses a grave threat to financial stability and must undertake mitigating actions. The FSOC is also empowered to designate systemically important payment, clearing and settlement activities of financial institutions, subjecting them to prudential supervision and regulation, and, assisted by the Office of Financial Research within the U.S. Department of the Treasury, can gather data and reports from financial institutions, including us.

Under the Federal Reserve's enhanced prudential standards regulation under the Dodd-Frank Act, as amended by the EGRRCPA, we are required to comply with various liquidity-related risk management standards and maintain a liquidity buffer of unencumbered highly liquid assets based on the results of internal liquidity stress testing. This liquidity buffer is in addition to other liquidity requirements, such as the LCR and the NSFR. The regulations also establish requirements and responsibilities for our risk committee and mandate risk management standards.

In 2018, the Federal Reserve finalized rules that established SCCL for large banking organizations. U.S. G-SIBs, including us, are subject to a limit of 15% of Tier 1 capital for aggregate net credit exposures to any "major counterparty" (defined to include other U.S. G-SIBs, foreign G-SIBs and non-bank SIFIs supervised by the Federal Reserve). In addition, we are subject to a limit of 25% of Tier 1 capital for aggregate net credit exposures to any other unaffiliated counterparty. The final SCCL rules became effective for us on January 1, 2020.

The Federal Reserve has established a rule that imposes contractual requirements on certain "qualified financial contracts" to which U.S. G-SIBs, including us, and their subsidiaries are parties. Under the rule, certain qualified financial contracts generally must expressly provide that transfer restrictions and default rights against a U.S. G-SIB, or subsidiary of a U.S. G-SIB, are limited to the same extent as they would be under the Federal Deposit Insurance Act and Title II of the Dodd-Frank Act and their implementing regulations. In addition, certain qualified financial contracts may not, among other things, permit the exercise of any cross-default right against a U.S. G-SIB or subsidiary of a U.S. G-SIB based on an affiliate's entry into insolvency, resolution or similar proceedings, subject to certain creditor protections.

The systemic-risk regime also provides that for U.S. G-SIBs deemed to pose a grave threat to U.S. financial stability, the Federal Reserve, upon an FSOC vote, must limit that institution's ability to merge, restrict its ability to offer financial products, require it to terminate activities, impose conditions on activities or, as a last resort, require it to dispose of assets. Upon a grave threat determination by the FSOC, the Federal Reserve must issue rules that require financial institutions subject to the systemic-risk regime to maintain a debt-to-equity ratio of no more than 15 to 1 if the FSOC considers it necessary to mitigate the risk of the grave threat. The Federal Reserve also has the ability to establish further standards, including those regarding contingent capital, enhanced public disclosures and limits on

short-term debt, including off-balance sheet exposures.

Recovery and Resolution Planning

Under Section 165(d) of the Dodd-Frank Act, we are required to submit a resolution plan on a biennial basis jointly to the Federal Reserve and the FDIC (as used in this "Recovery and Resolution Planning" section, the Agencies). The purpose of our resolution plan is to describe our preferred resolution strategy and to demonstrate that we have the resources and capabilities to execute on that strategy in the event of major financial distress. Through resolution planning, we seek to maintain our role as a key infrastructure provider within the financial system, while minimizing risk to the financial system.

The final rule published in the Federal Register on November 1, 2019 requires a full resolution plan and a targeted resolution plan on an alternating basis in the relevant submission years. We submitted our 2021 targeted 165(d) resolution plan by July 1, 2021, as required. The targeted resolution plan included the core elements of resolution planning and some specific firm level information, including impacts from the COVID-19 pandemic. Also included was an overview of remediation we completed to address a 2019 shortcoming on governance mechanisms related to timely operationalization of the support agreement (described below). On November 23, 2022, the Agencies issued State Street's results and found no shortcomings or deficiencies for our 2021 targeted 165(d) resolution plan submission. In addition, the Agencies have concluded that the 2019 shortcoming on governance mechanisms has been successfully addressed. Our next 165(d) resolution plan submission is due to the Agencies by July 1, 2023.

In the event of material financial distress, our preferred resolution strategy is the Single Point of Entry (SPOE) Strategy. The SPOE Strategy provides that prior to the bankruptcy of the Parent Company and pursuant to a support agreement among the Parent Company, SSIF (a direct subsidiary of the Parent Company), our Beneficiary Entities (as defined below) and certain of our other entities, SSIF is obligated, up to its available resources, to recapitalize and/or provide liquidity to State Street Bank and the other entities benefiting from such capital and/or liquidity support (collectively with State Street Bank, "Beneficiary Entities"), in amounts designed to prevent the Beneficiary Entities from themselves entering into resolution proceedings. Following the recapitalization of, or provision of liquidity to the Beneficiary Entities, the Parent Company would enter into a bankruptcy proceeding under the U.S. Bankruptcy Code. The Beneficiary Entities and our other subsidiaries would be transferred to a newly organized holding company held by a reorganization trust for the benefit of the Parent Company's claimants.

Under the support agreement, the Parent Company pre-funded SSIF by contributing certain of its assets (primarily its liquid assets, cash deposits, investments in intercompany debt, investments in marketable securities and other cash and non-cash equivalent investments) to SSIF at the time it entered into the support agreement and will continue to contribute such assets, to the extent available, on an ongoing basis. In consideration for these contributions, SSIF has agreed in the support agreement to provide capital and liquidity support to the Parent Company and all of the Beneficiary Entities in accordance with the Parent Company's capital and liquidity policies. Under the support agreement, the Parent Company is only permitted to retain cash needed to meet its upcoming obligations and to fund expected expenses during a potential bankruptcy proceeding. SSIF has provided the Parent Company with a committed credit line and issued (and may issue) one or more promissory notes to the Parent Company (the "Parent Company Funding Notes") that together are intended to allow the Parent Company to continue to meet its obligations throughout the period prior to the occurrence of a "Recapitalization Event", which is defined as the earlier occurrence of: (1) one or more capital and liquidity thresholds being breached or (2) the authorization by the Parent Company's Board of Directors for the Parent Company to commence bankruptcy proceedings. The support agreement does not obligate SSIF to maintain any specific level of resources and SSIF may not have sufficient resources to implement the SPOE Strategy.

In the event a Recapitalization Event occurs, the obligations outstanding under the Parent Company Funding Notes would automatically convert into or be exchanged for capital contributed to SSIF. The obligations of the Parent Company and SSIF under the support agreement are secured through a security agreement that grants a lien on the assets that the Parent Company and SSIF would use to fulfill their obligations under the support agreement to the Beneficiary Entities. SSIF is a distinct legal entity separate from the Parent Company and the Parent Company's other affiliates.

In accordance with our policies, we are required to monitor, on an ongoing basis, the capital and liquidity needs of State Street Bank and our other Beneficiary Entities. To support this process, we have established a trigger framework that identifies key actions that would need to be taken or decisions that would need to be made if certain events tied to our financial condition occur. The trigger thresholds are set at levels intended to provide for the availability of sufficient capital and liquidity to enable an orderly resolution without extraordinary government support

that results in us emerging from resolution as a stabilized institution with market confidence restored.

Upon the occurrence of a Recapitalization Event: (1) SSIF would not be authorized to provide any further liquidity to the Parent Company; (2) the Parent Company would be required to contribute to SSIF any remaining assets it is required to contribute to SSIF under the support agreement (which specifically exclude amounts designated to fund expected expenses during a potential bankruptcy proceeding); (3) SSIF would be required to provide capital and liquidity support to the Beneficiary Entities to support such entities' continued operation to the extent of its available resources and consistent with the support agreement; and (4) the Parent Company would be expected to commence Chapter 11 proceedings under the U.S. Bankruptcy Code. No person or entity, other than a party to the support agreement, should rely on any of our affiliates being or remaining a Beneficiary Entity or receiving capital or liquidity support pursuant to the support agreement, including in evaluating any of our entities from a creditor's perspective or determining whether to enter into a contractual relationship with any of our entities.

State Street Bank is also required to submit periodically to the FDIC a plan for resolution in the event of its failure, referred to as an IDI plan. We submitted our last IDI plan before July 1, 2018. In November 2018, the FDIC had announced that until the FDIC completed revisions to its IDI plan requirements, no IDI plans would be required to be filed. On June 25, 2021, the FDIC issued a policy statement on resolution plans for IDIs that allows for content streamlining and adjusts the frequency of submissions to a three-year cycle. State Street Bank's next IDI plan submission deadline is December 1, 2023.

Additionally, we are required to submit a recovery plan to the Federal Reserve. This plan includes detailed governance triggers and contingency actions that can be implemented in a timely manner in the event of extreme financial distress in those entities. We also have recovery planning requirements in certain international jurisdictions where we operate.

Orderly Liquidation Authority

Under the Dodd-Frank Act, certain financial companies, including bank holding companies such as the Parent Company, and certain covered subsidiaries, can be subjected to the orderly liquidation authority. For the FDIC to be appointed as our receiver, two-thirds of the FDIC Board and two-thirds of the Federal Reserve Board must recommend appointment, and the U.S. Treasury Secretary, in consultation with the U.S. President, must then make certain extraordinary financial distress and systemic risk determinations. Absent such actions, we, as a bank holding company, would remain subject to the U.S. Bankruptcy Code.

The orderly liquidation authority went into effect in 2010, and rulemaking is proceeding incrementally, with some regulations now finalized and others planned but not yet proposed. If the FDIC were appointed as the receiver of the Parent Company pursuant to the orderly liquidation authority, the FDIC would have considerable powers to resolve the Parent Company, including: (1) the power to remove officers and directors responsible for the Parent Company'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 similarly situated creditors, subject to a minimum recovery right to receive at least what they 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.

In 2013, the FDIC released its proposed SPOE strategy for resolution of a SIFI under the orderly liquidation authority. The FDIC's release outlines how it would likely use its powers under the orderly liquidation authority to resolve a SIFI by placing its top-tier U.S. holding company in receivership and keeping its operating subsidiaries open and out of insolvency proceedings by transferring the operating subsidiaries to a new bridge holding company, recapitalizing the operating subsidiaries and imposing losses on the shareholders and creditors of the holding company in receivership according to their statutory order of priority.

Derivatives

Title VII of the Dodd-Frank Act imposed a comprehensive regulatory structure on the OTC derivatives market, including requirements for clearing, exchange trading, capital, margin, reporting and record-keeping. Title VII also requires certain persons to register as a major swap participant, a swap dealer or a securities-based swap dealer. The CFTC, the SEC, and other U.S. regulators have largely implemented key provisions of Title VII, although certain final regulations have only been in place a short period of time and others have not been finalized. Through this rulemaking process, these regulators collectively have adopted or proposed, among other things, regulations relating to reporting and record-keeping obligations, margin and capital requirements, the scope of registration and the central clearing and exchange trading requirements for certain OTC derivatives. The CFTC has also issued rules to enhance the oversight of clearing and

trading entities. The CFTC, along with other regulators, including the Federal Reserve, have also issued rules with respect to margin requirements for uncleared derivatives transactions.

State Street Bank has registered provisionally with the CFTC as a swap dealer. As a provisionally registered swap dealer, State Street Bank is subject to significant regulatory obligations regarding its swap activity and the supervision, examination and enforcement powers of the CFTC and other regulators. The CFTC has granted State Street Bank a limited-purpose swap dealer designation. Under this limited-purpose designation, interest rate swap activity conducted by State Street Bank's Global Treasury group is not subject to certain of the swap regulatory requirements otherwise applicable to swaps entered into by a registered swap dealer, subject to a number of conditions. For all other swap transactions, our swap activities remain subject to all applicable swap dealer regulations.

Subsidiaries

The Federal Reserve is the primary federal banking agency responsible for regulating us and our subsidiaries, including State Street Bank, with respect to both our U.S. and non-U.S. operations. Our banking subsidiaries are subject to supervision and examination by various regulatory authorities and have regulatory requirements that may differ from State Street Corporation.

State Street Bank

State Street Bank is a member of the Federal Reserve System, its deposits are insured by the FDIC and it is subject to applicable federal and state banking laws and to supervision and examination by the Federal Reserve, as well as by the Massachusetts Commissioner of Banks, the FDIC, and the regulatory authorities of those states and countries in which State Street Bank operates a branch.

As with the Parent Company, State Street Bank is considered an advanced approaches banking organization subject to the Basel III framework in the U.S. and is also subject to the market risk capital rule jointly issued by U.S. Agencies to implement the changes to the market risk capital framework in the U.S. As required by the Dodd-Frank Act, State Street Bank, as an advanced approaches banking organization, is subject to a "capital floor," also referred to as the Collins Amendment, in the assessment of its regulatory capital adequacy, including the capital conservation buffer and countercyclical capital buffer described above in this "Supervision and Regulation" section.

Under the Basel III rule, State Street Bank's regulatory capital calculations, including any additions or deductions from capital for regulatory purposes, are consistent with the calculations of the Parent Company.

Similar to our Parent Company, State Street Bank is subject to the Tier 1 leverage ratio and the supplementary leverage ratio. However, as State Street Bank is the insured depository institution subsidiary of one of the eight U.S. G-SIBs, it is required to maintain a minimum Tier 1 leverage ratio of 5% and a minimum SLR of 6% to be considered well capitalized.

Furthermore, for the purposes of calculating the SLR, State Street Bank is similarly subject to a final rule adopted by the U.S. Agencies that excludes central bank deposits from a custodial banking organization's total leverage exposure. For the quarter ended December 31, 2022, State Street Bank excluded $78.5 billion of average balances held on deposit at central banks from the denominator used in the calculation of our SLR based on this custodial banking exclusion.

Pursuant to the BCBS's NSFR final rule, as a subsidiary of a U.S. G-SIB, State Street Bank is similarly required to maintain an NSFR that is equal to or greater than 100%.

We and our subsidiaries that are not subsidiaries of State Street Bank are affiliates of State Street Bank under federal banking laws, which impose restrictions on various types of transactions, including loans, extensions of credit, investments or asset purchases by or from State Street Bank, on the one hand, to us and those of our subsidiaries, on the other. Transactions of this kind between State Street Bank and its affiliates generally are limited with respect to each affiliate to 10% of State Street Bank's capital and surplus, as defined by the aforementioned banking laws, are limited in the aggregate for all affiliates to 20% of State Street Bank's capital and surplus, and in some cases are also subject to strict collateral requirements. Derivatives, securities borrowing and securities lending transactions between State Street Bank and its affiliates became subject to these restrictions pursuant to the Dodd-Frank Act. The Dodd-Frank Act also expanded the scope of transactions required to be collateralized. In addition, the Volcker Rule generally prohibits similar transactions between the Parent Company or any of its affiliates and covered funds for which we or any of our affiliates serve as the investment manager, investment adviser, commodity trading advisor or sponsor and other covered funds organized and offered pursuant to specific exemptions in the Volcker Rule regulations.

Federal law also requires that certain transactions by a bank with affiliates be on terms and under circumstances, including credit standards, that are substantially the same, or at least as favorable to the bank, as those prevailing at the time for comparable transactions involving other non-affiliated companies. Alternatively, in the absence of

comparable transactions, the transactions must be on terms and under circumstances, including credit standards, that in good faith would be offered to, or would apply to, non-affiliated companies.

State Street Bank is also prohibited from engaging in certain tie-in arrangements in connection with any extension of credit or lease or sale of property or furnishing of services. Federal law provides for a depositor preference on amounts realized from the liquidation or other resolution of any depository institution insured by the FDIC.

Other Subsidiaries

Our other subsidiary trust companies are subject to supervision and examination by the OCC, the Federal Reserve or by the appropriate state banking regulatory authorities of the states in which they are organized and operate. Our continental European banking subsidiary, State Street Bank International GmbH is a significant entity in accordance with European banking regulations and accordingly is supervised directly by the European Central Bank. State Street Bank International GmbH operates in several countries including Germany, Luxembourg, Italy, France and Switzerland. In the United Kingdom, the London branch of State Street Bank is dually regulated by the Prudential Regulatory Authority and the Financial Conduct Authority, in Ireland our depositary and fund administration companies are regulated by the Central Bank of Ireland and in Canada our trust company is regulated by the Office of the Superintendent of Financial Institutions. Our other subsidiaries internationally engaged in our investment servicing activities are regulated by applicable authorities in the jurisdictions of their activities. Our subsidiaries involved in our investment management and securities and markets businesses are regulated by governments, securities exchanges, self-regulatory organizations, central banks and regulatory bodies in U.S. federal and state and non-U.S. jurisdictions, especially in those jurisdictions in which we maintain an office.

Many aspects of our investment management activities are subject to U.S. federal and state, as well as non-U.S., laws and regulations primarily intended to benefit the investment holder, rather than our shareholders. These laws and regulations generally grant supervisory agencies and bodies broad administrative powers, including the power to limit or restrict us from conducting our investment management activities in the event that we fail to comply with such laws and regulations, and examination authority. Our business related to investment management and trusteeship of collective trust funds and separate accounts offered to employee benefit plans is subject to the Employee Retirement Income Security Act (ERISA), and is regulated by the U.S. DOL.

The majority of our non-U.S. asset servicing operations are conducted pursuant to the Federal Reserve's Regulation K through State Street Bank’s Edge Act subsidiary or through international branches of State Street Bank. An Edge Act corporation is a corporation organized under federal law that conducts foreign business activities. In general, banks may not make investments in their Edge Act corporations (and similar state law corporations) that exceed 20% of their capital and surplus, as defined in the relevant banking regulations, and the investment of any amount in excess of 10% of capital and surplus requires the prior approval of the Federal Reserve.

In addition to our non-U.S. operations conducted pursuant to Regulation K, we also make new investments abroad directly (through us or through our non-banking subsidiaries) pursuant to the Federal Reserve's Regulation Y, or through international bank branch expansion, neither of which is subject to the investment limitations applicable to Edge Act subsidiaries.

Additionally, Massachusetts has its own bank holding company statute, under which we, among other things, may be required to obtain prior approval by the Massachusetts Board of Bank Incorporation for an acquisition of more than 5% of any additional bank's voting shares, or for other forms of bank acquisitions.

Anti-Money Laundering and Financial Transparency

We and certain of our subsidiaries are subject to the Bank Secrecy Act of 1970, as amended by the USA PATRIOT Act of 2001, and related regulations, which contain AML and financial transparency provisions and which require implementation of an AML compliance program, including processes for verifying client identification and monitoring client transactions and detecting and reporting suspicious activities. AML laws outside the U.S. contain similar requirements. We have implemented policies, procedures and internal controls that are designed to promote compliance with applicable AML laws and regulations. AML laws and regulations applicable to our operations may be more stringent than similar requirements applicable to our non-regulated competitors or financial institutions principally operating in other jurisdictions. Compliance with applicable AML and related requirements is a common area of review for financial regulators, and any failure by us to comply with these requirements could result in fines, penalties, lawsuits, regulatory sanctions, difficulties in obtaining governmental approvals, restrictions on our business activities or harm to our reputation.

Deposit Insurance

The Dodd-Frank Act made permanent the general $250,000 deposit insurance limit for insured

deposits. The FDIC's Deposit Insurance Fund (DIF) is funded by assessments on FDIC-insured depository institutions. The FDIC assesses DIF premiums based on an insured depository institution's average consolidated total assets, less the average tangible equity of the insured depository institution during the assessment period. For larger institutions, such as State Street Bank, assessments are determined based on regulatory ratings and forward-looking financial measures to calculate the assessment rate, which is subject to adjustments by the FDIC, and the assessment base.

In July 2022, the FDIC adopted a final rule, applicable to all IDIs, to increase initial base deposit insurance assessment rate schedules uniformly by 2 basis points, effective as of the first quarterly assessment period of 2023. The FDIC also concurrently maintained the Designated Reserve Ratio (DRR) for the DIF at 2% for 2023. The increase in assessment rate schedules is intended to increase the likelihood that the reserve ratio of the DIF reaches the statutory minimum of 1.35% by the statutory deadline of September 30, 2028.

The FDIC is required to determine whether and to what extent adjustments to the assessment base are appropriate for "custody banks" that satisfy specified institutional eligibility criteria. The FDIC has concluded that certain liquid assets could be excluded from the deposit insurance assessment base of custody banks. This has the effect of reducing the amount of DIF insurance premiums due from custody banks. State Street Bank qualifies as a custody bank for this purpose. The custody bank assessment adjustment may not exceed total transaction account deposits identified by the institution as being directly linked to a fiduciary or custody and safekeeping asset.

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, including minimum capital ratios. While these regulations apply only to banks, such as State Street Bank, the Federal Reserve is authorized to take appropriate action against a parent bank holding company, such as our Parent Company, based on the under-capitalized status of any banking subsidiary. In certain instances, we would be required to guarantee the performance of a capital restoration plan if one of our banking subsidiaries were undercapitalized.

Support of Subsidiary Banks

Under Federal Reserve regulations, a bank holding company such as our Parent Company is required to act as a source of financial and managerial strength to its banking subsidiaries. This requirement was added to the Federal Deposit Insurance Act by the Dodd-Frank Act. This means that we have a statutory obligation to commit resources to State Street Bank and any other banking subsidiary in circumstances in which we otherwise might not do so absent such a requirement. In the event of bankruptcy, any commitment by us to a federal bank regulatory agency to maintain the capital of a banking subsidiary will be assumed by the bankruptcy trustee and will be entitled to a priority payment.

Insolvency of an Insured U.S. Subsidiary Depository Institution

If the FDIC is appointed the conservator or receiver of an FDIC-insured U.S. subsidiary depository institution, such as State Street Bank, upon its insolvency or certain other events, the FDIC has the ability to transfer any of the depository institution's assets and liabilities to a new obligor without the approval of the depository institution's creditors, enforce the terms of the depository institution's contracts pursuant to their terms or repudiate or disaffirm contracts or leases to which the depository institution is a party. Additionally, the claims of holders of deposit liabilities and certain claims for administrative expenses against an insured depository institution would be afforded priority over other general unsecured claims against such an institution, including claims of debt holders of the institution and, under current interpretation, depositors in non-U.S. branches and offices, in the liquidation or other resolution of such an institution by any receiver. As a result, such persons would be treated differently from and could receive, if anything, substantially less than the depositors in U.S. offices of the depository institution.

Cyber Risk Management

In 2016, the Federal Reserve, FDIC and OCC issued an advance notice of proposed rulemaking regarding enhanced cyber risk management standards, which would apply to a wide range of large financial institutions and their third-party service providers, including us and our banking subsidiaries. The proposed standards would expand existing cybersecurity regulations and guidance to focus on cyber risk governance and management; management of internal and external dependencies; and incident response, cyber resilience and situational awareness. In addition, the proposal contemplates more stringent standards for institutions with systems that are critical to the financial sector. Although the FDIC and OCC in 2019 each withdrew the advance notice of proposed rulemaking, the Federal Reserve has not withdrawn the advance notice and may still propose such a rule.

Separately, the Federal Reserve, FDIC and OCC finalized a rule in November 2021 requiring

banking organizations to notify their primary federal regulators within 36 hours after identifying a “computer-security incident” that has materially affected, or is reasonably likely to materially affect, the viability of their operations, their ability to deliver banking products and services or the stability of the financial sector. The final rule became effective April 1, 2022.

Additionally, numerous jurisdictions have passed laws, rules and regulations regarding cyber risk management, such as DORA, and many are considering new or updated requirements that could impact our businesses, particularly as the application, interpretation and enforcement of these laws, rules and regulations are often uncertain and evolving.

Further discussion of cybersecurity risk management is provided in "Information Technology Risk Management" included in our Management's Discussion and Analysis in this Form 10-K.

ECONOMIC CONDITIONS AND GOVERNMENT POLICIES

Economic policies of the U.S. government and its agencies influence our operating environment. Monetary policy conducted by the Federal Reserve directly affects the level of interest rates, which may affect overall credit conditions of the economy. Monetary policy is applied by the Federal Reserve through open market operations in U.S. government securities, changes in reserve requirements for depository institutions, and changes in the discount rate and availability of borrowing from the Federal Reserve. Government regulation of banks and bank holding companies is intended primarily for the protection of depositors of the banks, rather than for the shareholders of the institutions and therefore may, in some cases, be adverse to the interests of those shareholders. We are similarly affected by the economic policies of non-U.S. government agencies, such as the ECB.

STATISTICAL DISCLOSURE BY BANK HOLDING COMPANIES

The following information included under Items 7 and 8 in this Form 10-K, is incorporated by reference herein:

"Overview of Financial Results” table (Item 7) - presents return on average common equity, return on average assets, common dividend payout and equity-to-assets ratios.

“Distribution of Average Assets, Liabilities and Shareholders’ Equity; Interest Rates and Interest Differential” table (Item 8) - presents consolidated average balance sheet amounts, related fully taxable-equivalent interest earned and paid, related average yields and rates paid and changes in fully taxable-equivalent interest income and interest expense for each major category of interest-earning assets and interest-bearing liabilities.

“Investment Securities” section included in our Management's Discussion and Analysis (Item 7) and Note 3, “Investment Securities,” to the consolidated financial statements (Item 8) - disclose information regarding book values, market values, maturities and weighted-average yields of securities (by category).

“Loans” section included in our Management’s Discussion and Analysis (Item 7) and Note 4, “Loans,” to the consolidated financial statements (Item 8) - disclose our policy for placing loans on non-accrual status and distribution of loans, loan maturities and sensitivities of loans to changes in interest rates.

“Loans” section of Management’s Discussion and Analysis (Item 7) - discloses information regarding our loan concentrations.

“Credit Risk Management” section included in Management’s Discussion and Analysis (Item 7) and Note 4, “Loans,” to the consolidated financial statements (Item 8) - present the allocation of the allowance for credit losses, and a description of factors which influenced management’s judgment in determining amounts of additions or reductions to the allowance, if any, charged or credited to results of operations.

“Distribution of Average Assets, Liabilities and Shareholders’ Equity; Interest Rates and Interest Differential” table (Item 8) - discloses deposit information.

Note 8, “Short-Term Borrowings,” to the consolidated financial statements (Item 8) - discloses information regarding our short-term borrowings.

ITEM 1A. RISK FACTORS

Risk Factors

In the normal course of our business activities, we are exposed to a variety of risks. The following is a discussion of material risk factors applicable to us. Additional information about our risk management framework is included under “Risk Management” in Management’s Discussion and Analysis in this Form 10-K. Additional risks beyond those described in our Management's Discussion and Analysis or in the following discussion may apply to our activities or operations as currently conducted, or as we may conduct them in the future, or in the markets in which we operate or may in the future operate.

Strategic Risks

We are subject to intense competition in all aspects of our business, which could negatively affect our ability to maintain or increase our profitability.

The markets in which we operate across all facets of our business are both highly competitive and global. These markets are changing as a result of new and evolving laws and regulations applicable to financial services institutions. Regulatory-driven

market changes cannot always be anticipated, and may adversely affect the demand for, and profitability of, the products and services that we offer. In addition, new market entrants and competitors may address or influence changes in the markets more rapidly than we do, may have materially greater resources to invest in infrastructure and product development than we do, or may provide clients with a more attractive or cost-efficient offering of products and services, adversely affecting our business. Our efforts to develop and market new products, particularly in the "Fintech" sector including through State Street Alpha and State Street Digital, may position us in new markets with pre-existing competitors with strong market position. We have also experienced, and anticipate that we will continue to experience, significant pricing pressure in many of our core businesses, particularly our custodial and investment management services. This pricing pressure has and may continue to impact our revenue growth and operational margins and may limit the positive impact of new client demand and growth in AUC/A. Many of our businesses compete with other domestic and international banks and financial services companies, such as custody banks, investment advisors, broker/dealers, outsourcing companies, information providers, data analytics and processing companies. Further consolidation within the financial services industry could also pose challenges to us in the markets we serve, including potentially increased downward pricing pressure across our businesses.

Some of our competitors, including our competitors in core services, have substantially greater capital resources than we do, are not subject to as stringent capital or other regulatory requirements as we are, or may not be as constrained as we are by these requirements due to the relative size of our balance sheet. In some of our businesses, we are service providers to significant competitors. These competitors are in some instances significant clients, and the retention of these clients involves additional risks, such as the avoidance of actual or perceived conflicts of interest and the maintenance of high levels of service quality and intra-company confidentiality. Our relationships with other businesses, including competitors, necessarily involve the sharing of confidential information, and we cannot be certain, notwithstanding the existence of confidentiality obligations on the part of those other businesses, that our information will not be used to the competitive advantage of others. The ability of a competitor to offer comparable or improved products or services at a lower price would likely negatively affect our ability to maintain or increase our profitability. Many of our core services are subject to contracts that have relatively short terms or may be terminated by our client after a short notice period. In addition, pricing pressures as a result of the activities of competitors, client pricing reviews, and rebids, as well as the introduction of new products, may result in a reduction in the prices we can charge for our products and services.

We are subject to variability in our assets under custody and/or administration and assets under management, and in our financial results, due to the significant size of our relationship with many of our institutional clients, and are also subject to significant pricing pressure due to trends in the market for custodial services and the considerable market influence exerted by those clients.

Our clients include institutional investors, such as mutual funds, collective investment funds, UCITS, hedge funds and other investment pools, corporate and public retirement plans, insurance companies, official institutions, foundations, endowments and investment managers. In both our asset servicing and asset management businesses, we endeavor to attract institutional investors controlling large and diverse pools of assets, as those clients typically have the opportunity to benefit from the full range of our expertise and service offerings. Due to the large pools of assets controlled by these clients, the loss or gain of one client, or even a portion of the assets controlled by one client, or a client's decision to in-source certain services that we provide, could have a significant effect on our AUC/A or our AUM, as applicable, in the relevant period. Loss of all or a portion of the servicing of a client's assets can occur for a variety of reasons. For example, as previously disclosed in early 2021, due to a decision to diversify providers, one of our large asset servicing clients has advised us it expects to move a significant portion of its ETF assets currently with State Street to one or more other providers pending necessary approvals. The transition began in 2022, but will principally occur in 2023 and 2024. For the year ended December 31, 2022, the fee revenue associated with the assets yet to transition represented approximately 1.7% of our total fee revenue. Our AUM or AUC/A are also affected by decisions by institutional owners to favor or disfavor certain investment instruments or categories. Similarly, if one or more clients change the asset class in which a significant portion of assets are invested (e.g., by shifting investments from emerging markets to the U.S.), those changes could have a significant effect on our results of operations in the relevant period, as our fee rates often change based on the type of asset classes we are servicing or managing. As our fee revenue is significantly impacted by our levels of AUC/A and AUM, changes in levels of different asset classes could have a corresponding significant effect on our results of operations in the relevant period. Large institutional

clients also, by their nature, are often able to exert considerable market influence, and this, combined with strong competitive forces in the markets for our services, has resulted in, and may continue to result in, significant pressure to reduce the fees we charge for our services in both our asset servicing and asset management lines of business. Our strategy of focusing our efforts on the segments of the market for investor services represented by very large asset managers and asset owners causes us to be particularly impacted by this industry trend. Many of these large clients are also under competitive and regulatory pressures that are driving them to manage the expenses that they and their investment products incur more aggressively, which in turn exacerbates their pressures on our fees.

Development and completion of new products and services, including State Street Alpha or State Street Digital, may impose costs on us, involve dependencies on third parties and may expose us to increased operational and model risk.

Our financial performance depends, in part, on our ability to develop and market new and innovative services and to adopt or develop new technologies that differentiate our products or provide cost efficiencies, while avoiding increased related expenses. This dependency is exacerbated in the current “FinTech” environment, where financial institutions are investing significantly in evaluating new technologies, such as distributed ledger technology (“Blockchain"), and developing potentially industry-changing products, services and standards. For example, in 2018, we acquired CRD, and are leveraging the capabilities acquired to create State Street Alpha by combining them with offerings from our Investment Servicing business line. Similarly, in 2021, we established State Street Digital to focus on the development of digital assets and technologies. The introduction of new products and services can require significant time and resources, including regulatory approvals and the development and implementation of technical data management, control and model validation requirements and effective security and resiliency elements. New products and services, such as State Street Alpha and State Street Digital, often also involve dependencies on third parties to, among other things, access innovative technologies, develop new distribution channels or form collaborative product and service offerings, and can require complex strategic alliances and joint venture relationships. Substantial risks and uncertainties are associated with the introduction of new products and services, strategic alliances and joint ventures, including rapid technological change in the industry, our ability to access technical, data and other information from our clients, significant and ongoing investments required to bring new products and services to market in a timely manner at competitive prices, sharing of benefits in those relationships, conflicts with existing business partners and clients, protection of intellectual property and other confidential information, the competition for employees with the necessary expertise and experience and sales and other materials that fully and accurately describe the product or service and its underlying risks and are compliant with applicable regulations. New products or services may fail to operate or perform as expected and may not be suitable for the intended client or may not produce anticipated efficiencies, savings or benefits for either the client or us. Our failure to manage these risks and uncertainties also exposes us to enhanced risk of operational lapses, which may result in the recognition of financial statement liabilities. Regulatory and internal control requirements, capital requirements, competitive alternatives, vendor relationships and shifting market preferences may also determine if such initiatives can be brought to market in a manner that is timely and attractive to our clients. Failure to successfully manage all of the above risks in the development and implementation of new products or services, including continued development of State Street Alpha and State Street Digital, could have a material adverse effect on our business and reputation, consolidated results of operations or financial condition.

Our business may be negatively affected by our failure to update and maintain our technology infrastructure.

In order to maintain and grow our business, we must make strategic decisions about our current and future business plans and effectively execute upon those plans. Strategic initiatives that we are currently developing or executing against include cost initiatives, enhancements and efficiencies to our operational processes, improvements to existing and new service offerings, targeting for sales growth certain segments of the markets for investor services and asset management, and enhancements to existing and development of new information technology and other systems. Implementing strategic programs and creating cost efficiencies involves certain strategic, technological and operational risks. Many features of our present initiatives include investment in systems integration and new technologies and also the development of new, and the evolution of existing, methods and tools to accelerate the pace of innovation, the introduction of new services and enhancements to the resiliency of our systems and operations. These initiatives also may result in increased or unanticipated costs or earnings volatility, may take longer than anticipated to implement and may result in increases in operating losses, inadvertent data disclosures or other operating errors. We may not have sufficient

resources to complete all of the systems development or projects that might enhance our product capabilities, resiliency of our operations or cost initiatives and, consequently, management makes judgments as to the priority to give to competing initiatives. In implementing these programs, we have material dependencies on third parties with contractual limits on their responsibilities to us. The transition to new operating processes and technology infrastructure may also cause disruptions in our relationships with clients and employees or loss of institutional understanding and may present other unanticipated technical or operational hurdles. In addition, the relocation to or expansion of servicing activities and other operations in different geographic regions or vendors may entail client, regulatory and other third party data use, storage and security challenges, as well as other regulatory compliance, business continuity and other considerations. As a result, we may not achieve some or all of the anticipated cost savings or other benefits and may experience unanticipated challenges from clients, regulators or other parties or reputational harm. In addition, some systems development initiatives may not have access to significant resources or management attention and, consequently, may be delayed or unsuccessful. Many of our systems require enhancements to meet the requirements of evolving regulation, to enhance security and resiliency and decommission obsolete technologies, to permit us to optimize our use of capital or to reduce the risk of operating error. In addition, the implementation of State Street Alpha and State Street Digital requires substantial systems development and expense. We may not have the resources to pursue all of these objectives simultaneously.

Acquisitions, strategic alliances, joint ventures and divestitures pose risks for our business.

We acquire complementary businesses and technologies, enter into strategic alliances and joint ventures and divest portions of our business. We undertake transactions of varying sizes to, among other reasons, gain advantages of scale, expand our geographic footprint, access new clients, distribution channels, technologies or services, expand or enhance our product offerings, develop closer or more collaborative relationships with our business partners, efficiently deploy capital or leverage cost savings or other business or financial opportunities. We may not achieve the expected benefits of these transactions, which could result in increased costs, lowered revenues, ineffective deployment of capital, regulatory concerns, exit costs or diminished competitive position or reputation.

Transactions of this nature also involve a number of risks and financial, accounting, tax, regulatory, strategic, managerial, operational, cultural and employment challenges, which could adversely affect our consolidated results of operations and financial condition. For example, the businesses that we acquire or our strategic alliances or joint ventures may under-perform relative to the price paid or the resources committed by us; we may not achieve anticipated revenue growth or cost savings; or we may otherwise be adversely affected by acquisition-related charges. The intellectual property of an acquired business may be an important component of the value that we agree to pay for it. However, such acquisitions are subject to the risks that the acquired business may not own the intellectual property that we believe we are acquiring, that the intellectual property is dependent on licenses from third parties, that the acquired business infringes on the intellectual property rights of others, that the technology does not have the acceptance in the marketplace that we anticipated or that the technology requires significant investment to remain competitive. Similarly, such acquisitions present risks to our ability to retain the acquired talent, which may be essential to achieve our objectives in the acquisition. The integration of an acquired business' information technology infrastructure into ours has in the past and may in the future also expose us to additional security and resiliency risks. Further, past acquisitions have resulted in the recognition of goodwill and other significant intangible assets in our consolidated statement of condition. For example, we recorded goodwill and intangible assets of approximately $2.46 billion associated with our acquisition of CRD in 2018. These assets are not eligible for inclusion in regulatory capital under applicable requirements. In addition, we may be required to record impairment in our consolidated statement of income in future periods if we determine that the value of these assets has declined.

Through our acquisitions or joint ventures, we may also assume unknown or undisclosed business, operational, tax, regulatory and other liabilities, fail to properly assess known contingent liabilities or assume businesses with internal control deficiencies. While in most of our transactions we seek to mitigate these risks through, among other things, due diligence, indemnification provisions or insurance, these or other risk-mitigating provisions we put in place may not be sufficient to address these liabilities and contingencies and involve credit and execution risks associated with successfully seeking recourse from a third party, such as the seller or an insurance provider. Other major financial services firms have paid significant penalties to resolve government investigations into matters conducted in significant part by acquired entities.

Various regulatory approvals or consents, formal or informal, are generally required prior to closing of these transactions, which may include approvals, non-objections or regulatory exceptions from the

Federal Reserve and other domestic and non-U.S. regulatory authorities. These regulatory authorities may impose conditions on the completion of the acquisition or require changes to its terms that materially affect the terms of the transaction or our ability to capture some of the opportunities presented by the transaction, or may not approve, or may take substantial time to review, the transaction. Any such conditions, or any associated regulatory delays, could limit the benefits of the transaction. U.S. anti-trust and banking agencies continue to express concerns about the growth of large banking institutions. Acquisitions or joint ventures 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.

As an example, after consideration of both regulatory feedback and potential transaction modifications to address that feedback, we determined in November 2022 to no longer pursue our acquisition of the Brown Brothers Harriman's Investor Services business announced in September 2021. Any failure to complete a transaction, including that of Brown Brothers Harriman Investor Services business acquisition, presents reputational, counterparty and competitive risks that could affect our business, results of operations and financial condition, potentially materially.

The integration and the retention and development of the benefits of our acquisitions result in risks to our business and other uncertainties.

In recent years, we have undertaken acquisitions, including our 2021 acquisition of Mercatus and our 2018 acquisition of CRD. The integration of acquisitions presents risks that differ from the risks associated with our ongoing operations. Integration activities are complicated and time consuming and can involve significant unforeseen costs. We may not be able to effectively assimilate services, technologies, key personnel or businesses of acquired companies into our business or service offerings as anticipated, and we may not achieve related revenue growth or cost savings. We also face the risk of being unable to retain, or cross-sell our products or services to, the clients of acquired companies or joint ventures and the risk of being unable to cross-sell acquired products or services to our existing clients. In particular, some clients, including significant clients, of an acquired business may have the right to transition their business to other providers on short notice for convenience, fiduciary or other reasons and may take the opportunity of the acquisition or market, commercial, relationship, service satisfaction or other developments following the acquisition to terminate, reduce or renegotiate the fees or other terms of our relationship. Any such client losses, reductions or renegotiations likely will reduce the expected benefits of the acquisition, including revenues, cross-selling opportunities and market share, cause impairment to goodwill and other intangibles or result in reputational harm, which effects could be material, and we may not have recourse against the seller of the business or the client. The risk of client loss is even greater where the client is a competitor of ours. Acquisitions of technology firms can involve extensive information technology integration, with associated risk of defects, security breaches and resiliency lapses and product enhancement and development activities, the costs of which can be difficult to estimate, as well as heightened cultural and compliance concerns in integrating an unregulated firm into a bank regulatory environment. Acquisitions of Investment Servicing businesses entail information technology systems conversions, which involve operational risks, as well as fiduciary and other risks associated with client retention. Acquisitions of Asset Management businesses similarly involve fiduciary and similar risks associated with client retention, distribution channels and additional servicing opportunities, as well as potential cultural conflicts. Joint ventures involve all of these risks, as well as risks associated with shared control and decision-making (even in majority-owned situations), minority rights and exit rights, which can delay, challenge or foreclose execution on material opportunities or initiatives, create regulatory risks and limit divestment opportunities.

With any acquisition, the integration of the operations and resources of the businesses could result in the loss of key employees, the disruption of our and the acquired company's ongoing businesses or inconsistencies in standards, controls, procedures or policies that could adversely affect our ability to maintain relationships with clients, business partners or employees, maintain regulatory compliance or achieve the anticipated benefits of the acquisition. Integration efforts may also divert management attention and resources.

Competition for qualified members of our workforce is intense, and we may not be able to attract and retain the personnel we need to support our business.

Our success depends, in large part, on our ability to attract and retain qualified personnel. Competition for labor in most activities in which we engage can be intense, including for both individuals identified as key talent and for other personnel. We may not be able to hire people or retain them, particularly in light of challenges associated with compensation restrictions applicable, or which may become applicable, to banks and some asset managers and that are not applicable to other financial services firms in all jurisdictions or to technology or other firms with which we compete for personnel, generally. This can be particularly

constraining when competing for skill sets which are in high demand, such as technology and information security. The unexpected loss of services of personnel in business units, control functions, information technology, operations or other areas could have a material adverse impact on our business and operations because of the loss of skills, knowledge of our markets, operations and clients, years of industry experience and, in some cases, the difficulty of promptly finding qualified replacement personnel. These adverse impacts may be exacerbated by increased costs and expenses driven by the current competitive labor market particularly with regard to the ability to meet compensation and hybrid working expectations, elevated inflationary pressures and increased costs associated with attracting, retaining and engaging personnel. In addition, the loss of personnel, either individually or as a group, could adversely affect our clients' perception of our ability to continue to manage certain types of investment management or servicing mandates to provide other services to them or to maintain a culture of innovation and proficiency.

Financial Market Risks

Geopolitical and economic conditions and developments could adversely affect us, particularly if we face increased uncertainty and unpredictability in managing our businesses.

Global financial markets can suffer from substantial volatility, illiquidity and disruption, particularly as a result of geopolitical disruptions, high inflation, slowing economic growth, concerns or developments related to the U.S. federal debt ceiling and tightening monetary policy by key central banks. If such volatility, illiquidity or disruption were to result in an adverse economic environment in the U.S. or internationally or result in a lack of confidence in the financial stability of major developed or emerging markets, such developments could have an adverse effect on our business, as well as the businesses of our clients and our significant counterparties, and could also increase the difficulty and unpredictability of aligning our business strategies, our infrastructure and our operating costs in light of uncertain market and economic conditions.

Market disruptions can adversely affect our consolidated results of operations if the value of our AUC/A or AUM decline, while the costs of providing the related services remain constant or increase. They may also result in investor preference trends towards asset classes and markets deemed more secure, such as cash or non-emerging markets, with respect to which our fee rates are often lower. These factors could reduce the profitability of our asset-based fee revenue and could also adversely affect our transaction-based revenue, such as revenues from securities finance and foreign exchange activities, and the volume of transactions that we execute for or with our clients. Further, the degree of volatility in foreign exchange rates can affect our foreign exchange trading revenue. In general, increased currency volatility tends to increase our market risk but also increases our opportunity to generate foreign exchange revenue. Conversely, periods of lower currency volatility tend to decrease our market risk but also decrease our foreign exchange revenue.

In addition, as our business grows globally and a significant percentage of our revenue is earned (and of our expenses paid) in currencies other than U.S. dollars, our exposure to foreign currency volatility could affect our levels of consolidated revenue, our consolidated expenses and our consolidated results of operations, as well as the value of our investment in our non-U.S. operations and our non-U.S. investment portfolio holdings. The extent to which changes in the strength of the U.S. dollar relative to other currencies affect our consolidated results of operations, including the degree of any offset between increases or decreases to both revenue and expenses, will depend upon the nature and scope of our operations and activities in the relevant jurisdictions during the relevant periods, which may vary from period to period.

As our product offerings expand, in part as we seek to take advantage of perceived opportunities arising under various regulatory reforms and resulting market changes, the degree of our exposure to various market and credit risks will evolve, potentially resulting in greater revenue volatility.

Our businesses have significant International operations, and disruptions in European and Asian economies could have an adverse effect on our consolidated results of operations or financial condition.

Economic conditions across the world face continued uncertainty due to, among other things, high and rising inflation, higher interest rates, supply pressures for key energy commodities, increased geopolitical risk in multiple regions including Ukraine, and heightened volatility in key emerging market economies. New or continued economic deterioration will renew concerns about sovereign debt sustainability, interdependencies among financial institutions and sovereigns, and political and other risks, particularly in the context of significant monetary tightening by many global central banks. Continued uncertainty in the external environment has led to increased concern around the near- to medium-term outlook for economic progress in the regions in which we operate, including Europe and Asia.

Given the scope of our International operations, economic or market uncertainty, volatility, illiquidity or disruption resulting from these and related factors could have a material adverse impact on our consolidated results of operations or financial

condition, with a greater relative impact as compared to our peers.

Our investment securities portfolio, consolidated financial condition and consolidated results of operations could be adversely affected by changes in market factors, including interest rates, credit spreads and credit performance.

Our investment securities portfolio represented approximately 35% of our total assets as of December 31, 2022. The gross interest income associated with our investment portfolio represented approximately 13% of our total gross revenue for the year ended December 31, 2022 and has represented as much as 31% of our total gross revenue in the fiscal years since 2007. As such, our consolidated financial condition and results of operations are materially exposed to the risks associated with our investment portfolio, including changes in interest rates, credit spreads, credit performance (including risk of default), credit ratings, our access to liquidity, foreign exchange markets and mark- to-market valuations, and our ability to profitably manage changes in repayment rates of principal with respect to our portfolio securities. While recent increases in interest rates are beneficial to NIM, uncertain economic and monetary policy environments continue to drive risks for ongoing volatility. Managing reinvestment for both higher and lower rate outcomes will continue to be a challenge. The extent to which the Federal Reserve engages in quantitative tightening activities, the market effects and the associated challenges in managing our investment portfolio, consolidated financial condition and consolidated results of operations, including our capital ratios and share repurchase program, may differ from or be exacerbated by the effects of changes in interest rates and also may be volatile and difficult to predict, presenting even further challenges. In addition, certain regulatory liquidity standards, such as the LCR, require that we maintain minimum levels of HQLA in our investment portfolio, which generally generate lower rates of return than other investment assets. This has resulted in increased levels of HQLA as a percentage of our investment portfolio and an associated negative impact on our NII and our NIM. As a result we may not be able to attain our prior historical levels of NII and NIM. For additional information regarding these liquidity requirements, refer to the “Liquidity Coverage Ratio and Net Stable Funding Ratio” section of “Supervision and Regulation” in Business in this Form 10-K. We may enter into derivative transactions to hedge or manage our exposure to interest rate risk, as well as other risks, such as foreign exchange risk and credit risk. Derivative instruments that we hold for these or other purposes may not achieve their intended results and could result in unexpected losses or stresses on our liquidity or capital resources.

Our investment securities portfolio represents a greater proportion of our consolidated statement of condition and our loan portfolio represents a smaller proportion (approximately 11% of our total assets as of December 31, 2022), in comparison to many other major financial institutions. In some respects, the accounting and regulatory treatment of our investment securities portfolio may be less favorable to us than a more traditional held-for-investment lending portfolio. For example, under the Basel III rule, after-tax changes in the fair value of AFS investment securities, which represented a majority of our investment portfolio for the first half of 2022, are recognized in AOCI and included in Tier 1 capital. Since loans held for investment are not subject to a fair value accounting framework, changes in the fair value of loans (other than expected credit losses) are not similarly included in the determination of Tier 1 capital under the Basel III rule. Due to this differing treatment, we may experience increased variability in our Tier 1 capital relative to other major financial institutions for which loan-and-lease portfolios represent a larger proportion of their consolidated total assets than ours.

Additional risks associated with our investment portfolio include:

- Asset class concentration. Our investment portfolio continues to have significant concentrations in several classes of securities, including agency residential MBS, commercial MBS and other ABS, and securities with concentrated exposure to consumers. These classes and types of securities experienced significant liquidity, valuation and credit quality deterioration during the financial crisis that began in mid-2007. We also hold non-U.S. government securities, non-U.S. MBS and ABS with exposures to European countries, whose sovereign-debt markets have experienced increased stress at times since 2011 and may continue to experience stress in the future. For further information, refer to the risk factor titled “Our businesses have significant European operations, and disruptions in European economies could have an adverse effect on our consolidated results of operations or financial condition". Further, we hold a portfolio of U.S. state and municipal bonds, the value of which may be affected by the budget deficits that a number of states and municipalities currently face, resulting in risks associated with this portfolio.
- Effects of market conditions. If market conditions deteriorate, our investment portfolio could experience a decline in market value, whether due to a decline in liquidity or an increase in the yield required by investors to hold such securities, regardless of our credit view of our portfolio holdings. In addition, in general, deterioration in credit

quality, or changes in management's expectations regarding repayment timing or in management's investment intent to hold securities to maturity, in each case with respect to our portfolio holdings, could result in recognition of an allowance for expected credit losses or an impairment. Similarly, if a material portion of our investment portfolio were to experience credit deterioration, our capital ratios as calculated pursuant to the Basel III rule could be adversely affected. This risk is greater with portfolios of investment securities that contain credit risk than with holdings of U.S. Treasury securities. Both AFS and HTM securities in our investment portfolio carry liquidity risk if there is lower demand for either the sale or sale under repurchase agreement of these securities.

- Effects of interest rates. Our investment portfolio is further subject to changes in both U.S. and non-U.S. (primarily in Europe) interest rates, and could be negatively affected by changes in those rates, whether or not expected. This is particularly true in the case of a quicker-than-anticipated increase in interest rates, which would decrease market values in the near-term, or monetary policy that results in persistently low or negative rates of interest on certain investments. The latter has been the case, for example, with respect to past ECB monetary policy, including negative interest rates in some jurisdictions, with associated negative effects on our investment portfolio reinvestment, NII and NIM. The effect on our NII has been exacerbated by the effects in recent fiscal years of the strong U.S. dollar relative to other currencies, particularly the Euro. If European interest rates remain low or decrease and the U.S. dollar strengthens relative to the Euro, the negative effects on our NII likely will continue or increase. The overall level of NII can also be impacted by the size of our deposit base, as further increases in interest rates could lead to reduced deposit levels and also lower overall NII. Further, a reduction in deposit levels could increase the requirements under the regulatory liquidity standards requiring us to invest a greater proportion of our investment portfolio holdings in HQLA that have lower yields than other investable assets. See also, “Our business activities expose us to interest rate risk” in this section.

Our business activities expose us to interest rate risk.

In our business activities, we assume interest rate risk by investing short-term deposits received from our clients in our investment portfolio of longer- and intermediate-term assets. Our NII and NIM are affected by among other things, the levels of interest rates in global markets, changes in the relationship between short- and long-term interest rates, the direction and speed of interest rate changes and the asset and liability spreads relative to the currency and geographic mix of our interest-earning assets and interest-bearing liabilities. These factors are influenced, among other things, by a variety of economic and market forces and expectations, including monetary policy and other activities of central banks, such as the Federal Reserve and ECB, that we do not control. Our ability to anticipate changes in these factors or to hedge the related on- and off-balance sheet exposures, and the cost of any such hedging activity, can significantly influence the success of our asset-and-liability management activities and the resulting level of our NII and NIM. The impact of changes in interest rates and related factors will depend on the relative duration and fixed- or floating-rate nature of our assets and liabilities. Sustained lower interest rates, a flat or inverted yield curve and narrow credit spreads generally have a constraining effect on our NII. In addition, our ability to change deposit rates in response to changes in interest rates and other market and related factors is limited by client relationship considerations. The impact of interest rates on our investment portfolio and consolidated financial results, including AOCI, can also affect our ability to maintain our capital ratios within our target ranges as well as the amount and timing of our future share repurchases. For example, in the first half of 2022 unrealized losses on AFS securities within AOCI, driven by the significant increase in interest rates across the yield curve, contributed to a decrease in CET1 capital. For additional information about the effects on interest rates on our business, refer to the Market Risk Management section, "Asset-and-Liability Management Activities" in our Management's Discussion and Analysis in this Form 10-K.

We assume significant credit risk to counterparties, many of which are major financial institutions. These financial institutions and other counterparties may also have substantial financial dependencies with other financial institutions and sovereign entities. These credit exposures and concentrations could expose us to financial loss.

The financial markets are characterized by extensive interdependencies among numerous parties, including banks, central banks, broker/dealers, insurance companies and other financial institutions. These financial institutions also include collective investment funds, such as mutual funds,

UCITS and hedge funds that share these interdependencies. Many financial institutions, including collective investment funds, also hold, or are exposed to, loans, sovereign debt, fixed-income securities, derivatives, counterparty and other forms of credit risk in amounts that are material to their financial condition. As a result of our own business practices and these interdependencies, we and many of our clients have concentrated counterparty exposure to other financial institutions and collective investment funds, particularly large and complex institutions, sovereign issuers, mutual funds, UCITS and hedge funds. Although we have procedures for monitoring both individual and aggregate counterparty risk, significant individual and aggregate counterparty exposure is inherent in our business, as our focus is on servicing large institutional investors.

In the normal course of our business, we assume concentrated credit risk at the individual obligor, counterparty or group level. Such concentrations may be material. Our material counterparty exposures change daily, and the counterparties or groups of related counterparties to which our risk exposure is concentrated are also variable during any reported period; our largest exposures tend to be to other financial institutions.

Concentration of counterparty exposure presents significant risks to us and to our clients because the failure or perceived weakness of our counterparties (or in some cases of our clients' counterparties) has the potential to expose us to risk of financial loss. Changes in market perception of the financial strength of particular financial institutions or sovereign issuers can occur rapidly, are often based on a variety of factors and are difficult to predict.

This was observed during the financial crisis that began in 2007-2008, when economic, market, political and other factors contributed to the perception of many financial institutions and sovereign issuers as being less credit worthy. This led to credit downgrades of numerous large U.S. and non-U.S. financial institutions and several sovereign issuers (which exposure stressed the perceived creditworthiness of financial institutions, many of which invest in, accept collateral in the form of, or value other transactions based on the debt or other securities issued by sovereigns) and substantially reduced value and liquidity in the market for their credit instruments. These or other factors could again contribute to similar consequences or other market risks associated with reduced levels of liquidity. As a result, we may be exposed to increased counterparty risks, either resulting from our role as principal or because of commitments we make in our capacity as agent for some of our clients.

Additional areas where we experience exposure to credit risk include:

- Short-term credit: The degree of client demand for short-term credit tends to increase during periods of market turbulence, which may expose us to further counterparty-related risks. For example, investors in collective investment vehicles for which we act as a custodian may experience significant redemption activity due to adverse market or economic news. Our relationship with our clients and the nature of the settlement process for some types of payments may result in the extension of short-term credit in such circumstances. We also provide committed lines of credit to support such activity. For some types of clients, we provide credit to allow them to leverage their portfolios, which may expose us to potential loss if the client experiences investment losses or other credit difficulties.
- Industry and country risks: In addition to our exposure to financial institutions, we are from time to time exposed to concentrated credit risk at an industry or country level. This concentration risk also applies to groups of unrelated counterparties that may have similar investment strategies involving one or more particular industries, regions, or other characteristics. These unrelated counterparties may concurrently experience adverse effects to their performance, liquidity or reputation due to events or other factors affecting such investment strategies. Though potentially not material individually (relative to any one such counterparty), our credit exposures to such a group of counterparties could expose us to a single market or political event or a correlated set of events that, in the aggregate, could have a material adverse impact on our business.
- Subcustodian risks: With the exception of the U.S., Canada, Germany and the United Kingdom, we maintain subcustodian relationships in all jurisdictions in which our clients invest, including emerging and other underdeveloped markets, and markets subject to sanctions. Our use of unaffiliated subcustodians exposes us to operational, reputational and regulatory risk, as we are dependent upon the subcustodians in performing several of our services to clients in those markets. Operational risk includes risks of the legal and regulatory systems and market practices of the jurisdictions in which the subcustodians operate. Our operating model exposes us to risk of unaffiliated subcustodians to a degree greater than some

of our competitors who have banking operations in more jurisdictions than we do. The risks of maintaining custody services in such markets are amplified due to evolving regulatory and sanctions requirements with respect to our financial exposures in the event those subcustodians, or we, are unable to return, transfer or reinvest clients' assets. In some regulatory regimes, such as the E.U.'s UCITS V directive, we are subject to requirements that we be responsible for resulting losses suffered by our clients, and we may agree to similar or more stringent standards with clients that are not subject to such regulations. In addition, to the extent we maintain currencies on our consolidated balance sheet (where the client deposit liability is with State Street and State Street, as principal, maintains cash on deposit with a subcustodian or clearing agency) or are subject to regulatory requirements to return assets placed in custody, we are also subject to the risk of credit exposure to such subcustodians and clearing agencies. Depending upon the currency and jurisdiction of the client, a significant portion of our deposit exposure in non-U.S. currencies is recognized on our consolidated balance sheet. In some jurisdictions, such as Russia, sanctions programs or government intervention inhibit our clients' and our ability to access or transfer cash or securities held for clients through subcustodians and clearing agencies. If such client deposit liabilities are on our consolidated balance sheet, we maintain a corresponding amount of cash on deposit with the subcustodian or clearing agency, which increases our credit exposure to that entity and can accumulate over time based upon distributions on, or other activities related to, our clients' assets. If the subcustodian or clearing agency were to become insolvent in circumstances not involving expropriation of assets or other circumstances that excuse performance under force majeure or other provisions, the risk of loss on such cash on deposit would be ours rather than the clients. As of December 31, 2022, we held cash on deposit with our subcustodian and clearing agencies in Russia, which amount is expected to increase substantially over time as long as the sanctions and other restrictions remain in effect, and which currently is subject to restrictions on our ability to access such deposits. Our subcustodians are also directly or subsidiaries of large, global financial institutions with whom we have other credit exposures. This credit exposure to these financial institutions or subcustodians can limit the financial relationship we may have with these counterparties and has in the past made, and may in the future make, compliance with specific U.S. regulatory single counterparty credit limits (SCCL) more challenging. For additional information, see Note 1 to the consolidated financial statements in this Form 10-K.

- Settlement risks: We are exposed to settlement risks, particularly in our payments and foreign exchange activities. Those activities may lead to extension of credit and consequent losses in the event of a counterparty breach or an operational error, including the failure to provide credit. Due to our membership in several industry clearing or settlement exchanges, we may be required to guarantee obligations and liabilities, or provide financial support, in the event that other members do not honor their obligations or default. Moreover, not all of our counterparty exposure is secured, and even when our exposure is secured, the realizable value of the collateral may have declined by the time we exercise our rights against that collateral. This risk may be particularly acute if we are required to sell the collateral into an illiquid or temporarily-impaired market or with respect to clients protected by sovereign immunity. We are exposed to risk of short-term credit or overdraft of our clients in connection with the process to facilitate settlement of trades and related foreign exchange activities, particularly when contractual settlement has been agreed with our clients. The occurrence of overdrafts at peak volatility could create significant credit exposure to our clients depending upon the value of such clients' collateral at the time. Our settlement-related activities and obligations are also subject to regulatory risk, including the risk of regulators globally accelerating the timeline to settlement, such as the SEC's recent rule to shorten the standard settlement cycle for securities transactions in the United States from trade date plus two business days (T+2) to trade date plus one business day (T+1) in 2024. This rule presents the risk of non-compliance, as well as careful coordination with and dependencies on other industry participants and additional risks associated with technology development and implementation, change management and operational errors, any of which could be material in light of the magnitude and volume of our settlement-related activities and obligations. Although

we have budgeted for anticipated expenses associated with implementing the rule, due to the nature of these and other risks and considerations, there can be no assurance actual costs will not exceed our expectations.

- Securities lending and repurchase agreement indemnification: On behalf of clients enrolled in our securities lending program, we lend securities to banks, broker/dealers and other institutions. In the event of a failure of the borrower to return such securities, we typically agree to indemnify our clients for the amount by which the fair market value of those securities exceeds the proceeds of the disposition of the collateral posted by the borrower in connection with such transaction. We also lend and borrow securities as principal, and in connection with those transactions receive a security interest in securities held by the borrowers in their securities portfolios and advance cash or securities as collateral to securities lenders. Borrowers are generally required to provide collateral equal to a contractually agreed percentage equal to or in excess of the fair market value of the loaned securities. As the fair market value of the loaned securities or collateral changes, additional collateral is provided by the borrower or a portion of collateral is returned to the borrower. In addition, our agency securities lending clients often purchase securities or other financial instruments from financial counterparties, including broker/dealers, under repurchase arrangements, frequently as a method of reinvesting the cash collateral they receive from lending their securities. Under these arrangements, the counterparty is obligated to repurchase these securities or financial instruments from the client at the same price (plus an agreed rate of return) at some point in the future. The value of the collateral is intended to exceed the counterparty's payment obligation, and collateral is adjusted daily to account for shortfall under, or excess over, the agreed-upon collateralization level. As with the securities lending program, we agree to indemnify our clients from any loss that would arise on a default by the counterparty under these repurchase arrangements if the proceeds from the disposition of the securities or other financial assets held as collateral are less than the amount of the repayment obligation by the client's counterparty. In such instances of counterparty default, for both securities lending and repurchase agreements, we, rather than our client, are exposed to the risks associated with collateral value.
- Repurchase and resale transactions: We enter into repurchase and resale transactions in eligible securities with sponsored clients and with other FICC members and, pursuant to FICC Government Securities Division rules, submit, novate and net the transactions when specific netting criteria are met. We may sponsor clients to clear their eligible repurchase or resale transactions with FICC, backed by our guarantee to FICC of the prompt and full payment and performance of our sponsored member clients' respective obligations. Although we obtain a security interest from our sponsored clients in the collateral that they receive, we are exposed to the associated risks, including insufficiency of the value of collateral.
- Stable value arrangements: We enter into stable value wrap derivative contracts with unaffiliated stable value funds that allow a stable value fund to provide book value coverage to its participants. During the 2008 financial crisis, the book value of obligations under many of these contracts exceeded the market value of the underlying portfolio holdings. Concerns regarding the portfolio of investments protected by such contracts, or regarding the investment manager overseeing such an investment option, may result in redemption demands from stable value products covered by benefit-responsive contracts at a time when the portfolio's market value is less than its book value, potentially exposing us to risk of loss.
- Private equity subscription finance credit facilities: We provide credit facilities to private equity funds. The portfolio consists of capital call lines of credit, the repayment of which is dependent on the receipt of capital calls from the underlying limited partner investors in the funds managed by these firms.
- U.S. municipal obligations remarketing credit facilities: We provide credit facilities in connection with the remarketing of U.S. municipal obligations, potentially exposing us to credit exposure to the municipalities issuing such bonds and contingent liquidity risk.
- Leveraged loans: we invest in leveraged loans, both in the U.S. and in Europe. We invest in these loans to non-investment grade borrowers through participation in loan syndications in the non-investment grade lending market. We rate these loans as "speculative" under our internal risk-rating

framework, and these loans have significant exposure to credit losses relative to higher-rated loans. We are therefore at a higher risk of default with respect to these investments relative to other of our investments activities. In addition, unlike other financial institutions that may have an active role in managing individual loan compliance, our investment in these loans is generally as a passive investor with limited control. Over time, our allowance for credit losses related to these loans may increase through additional provisions for credit losses.

- Commercial real estate: We finance commercial and multi-family properties, which serve as collateral for our loans. Although collateralized, these loans may become under-secured if the value of the collateral was over-estimated or changes. Loan payments are dependent on the successful operation and management of the underlying collateral property to generate sufficient cash flow to repay the loan in a timely fashion. A material decline in real estate markets or economic conditions could negatively impact value or property performance, which could adversely impact timely loan repayment, which may result in increased provision for credit losses on loans, and actual losses, either of which would have an adverse impact on our net income.
- Unavailability of netting: We are generally not able to net exposures across counterparties that are affiliated entities and may not be able in all circumstances to net exposures to the same legal entity across multiple products. As a consequence, we may incur a loss in relation to one entity or product even though our exposure to an entity's affiliates or across product types is over-collateralized. In some cases, for example in our securities finance and foreign exchange activities, we are able to enter into netting agreements that allow us to net offsetting exposures and payment obligations against one another. In the event we become unable, due to operational constraints, actions by regulators, changes in accounting principles, law or regulation (or related interpretations) or other factors, to net some or all of our offsetting exposures and payment obligations under those agreements, we would be required to gross up our assets and liabilities on our statement of condition and our calculation of RWA, accordingly. This would result in a potentially adverse impact on our regulatory ratios, including LCR, and present increased credit, liquidity, asset-and-liability management and operational risks, some of which could be material.

Under currently prevailing regulatory restrictions on credit exposure, we are required to limit our exposures to specific issuers or counterparties or groups of counterparties, including financial institutions and sovereign issuers. These credit exposure restrictions have and may further adversely affect certain of our businesses, may require that we expand our credit exposure to a broader range of issuers and counterparties, including issuers and counterparties that represent increased credit risk, may reduce or foreclose our ability to enter into advantageous transactions or ventures with particular counterparties and may require that we modify our operating models or the policies and practices we use to manage our consolidated statement of condition. The effects of these considerations may increase when evaluated under a stressed environment in stress testing, including CCAR. In addition, we are an adherent to the International Swaps and Derivatives Association 2015 Universal Resolution Stay Protocol and as such are subject to restrictions against the exercise of rights and remedies against fellow adherents, including other major financial institutions, in the event they or an affiliate of theirs enters into resolution. Although our overall business is subject to these factors, several of our activities are particularly sensitive to them including our currency trading business and our securities finance business. For a discussion of regulatory requirements applicable to our counterparty exposures, see “Item 1. Business-Supervision and Regulation - Enhanced Prudential Standards".

Given the limited number of strong counterparties in the current market, we are not able to mitigate all of our and our clients' counterparty credit risk.

Fee revenue represents a significant majority of our consolidated revenue and is subject to decline, among other things, in the event of a reduction in, or changes to, the level or type of investment activity by our clients.

We rely primarily on fee-based services to derive our revenue. This contrasts with commercial banks that may rely more heavily on interest-based sources of revenue, such as loans. During 2022, total fee revenue represented approximately 79% of our total revenue. Fee revenue generated by our Investment Servicing and Investment Management businesses is augmented by foreign exchange trading services, securities finance and software and processing fee revenue. The level of these fees is influenced by several factors, including the mix and volume of our AUC/A and our AUM, the value and type of securities positions held (with respect to AUC/A) and the volume of our clients' portfolio transactions, and the types of products and services used by our clients. Our fee revenue would be negatively affected, potentially materially, by a decline in the market value

of client portfolios resulting from a broad market correction, especially in equity markets.

In addition, our clients include institutional investors, such as mutual funds, collective investment funds, UCITS, hedge funds and other investment pools, corporate and public retirement plans, insurance companies, foundations, endowments and investment managers. Economic, market or other factors that reduce the level or rates of savings in or with those institutions, either through reductions in financial asset valuations or through changes in investor preferences, could materially reduce our fee revenue and have a material adverse effect on our consolidated results of operations.

If we are unable to effectively manage our capital and liquidity, including by continuously attracting deposits and other short-term funding, our consolidated financial condition, including our regulatory capital ratios, our consolidated results of operations and our business prospects, could be adversely affected.

Liquidity management, including on an intra-day basis, is critical to the management of our consolidated statement of condition and to our ability to service our client base. We generally use our liquidity to:

- meet clients' demands for return of their deposits;
- extend credit to our clients in connection with our investor services businesses; and
- fund the pool of long- and intermediate-term assets that are included in the investment securities and loan portfolio carried in our consolidated statement of condition.

Because the demand for credit by our clients, particularly settlement related extensions of credit, is difficult to predict and control, and may be at its peak at times of disruption in the securities markets, and because the average maturity of our investment securities and loan portfolios is longer than the contractual maturity of our client deposit base, we need to continuously attract, and are dependent on access to, various sources of short-term funding. Since the 2008 financial crisis, the level of client deposits held by us has tended to increase during times of market disruption; however, since such deposits are considered to be transitory, we have historically deposited so-called excess deposits with U.S. and non-U.S. central banks and in other highly liquid but low-yielding instruments. These levels of excess client deposits, when they manifest, have increased our NII but have adversely affected our NIM. There can be no assurance that client behavior in a market disruption will be similar in the future or that our level of deposit funding will not decrease.

In managing our liquidity, our primary source of short-term funding is client deposits, which are predominantly transaction-based deposits by institutional investors. Our ability to continue to attract these deposits, and other short-term funding sources such as certificates of deposit, is subject to variability based on a number of factors, including volume and volatility in global financial markets, the interest rates that we are prepared to pay for these deposits, the loss or gain of one or more clients, client interest in reducing non-interest bearing deposits, the perception of safety of these deposits or short-term obligations relative to alternative short-term investments available to our clients, including the capital markets, and the classification of certain deposits for regulatory purposes and related discussions we may have from time to time with clients regarding better balancing our clients' cash management needs with our economic and regulatory objectives.

The Parent Company is a non-operating holding company and generally maintains only limited cash and other liquid resources at any time primarily to meet anticipated near-term obligations. To effectively manage our liquidity we routinely transfer assets among affiliated entities, subsidiaries and branches. Internal or external factors, such as regulatory requirements and standards, including resolution planning and restrictions on dividend distributions, influence our liquidity management and may limit our ability to effectively transfer liquidity internally which could, among other things, restrict our ability to fund operations, dividends or stock repurchases or pay interest on debt securities or require us to seek external and potentially more costly capital and impact our liquidity position.

In addition, while not obligations of ours, the investment products that we manage for third parties may be exposed to liquidity risks. These products may be funded on a short-term basis or the clients participating in these products may have a right to the return of cash or assets on limited notice. These business activities include, among others, securities finance collateral pools, money market and other short-term investment funds and liquidity facilities utilized in connection with municipal bond programs. If clients demand a return of their cash or assets, particularly on limited notice, and these investment pools do not have the liquidity to support those demands, we could be forced to sell investment securities held by these asset pools at unfavorable prices, damaging our reputation as a service provider and potentially exposing us to claims related to our management of the pools.

The availability and cost of credit in short-term markets are highly dependent on the markets' perception of our liquidity and creditworthiness. Our efforts to monitor and manage our liquidity risk, including on an intra-day basis, may not be successful or sufficient to deal with dramatic or

unanticipated changes in the global securities markets or other event-driven reductions in liquidity. As a result of such events, among other things, our cost of funds may increase, thereby reducing our NII, or we may need to dispose of a portion of our investment securities portfolio, which, depending on market conditions, could result in a loss from such sales of investment securities being recorded in our consolidated statement of income.

We may need to raise additional capital or debt 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 or debt in order to maintain our credit ratings, in response to regulatory changes, including capital rules, or for other purposes, including financing acquisitions and joint ventures.

However, our ability to access the capital markets, if needed, on a timely basis or at all will depend on a number of factors, such as the state of the financial markets and securities law requirements and standards. In the event of rising interest rates, disruptions in financial markets, negative perceptions of our business or our financial strength, or other factors that would increase our cost of borrowing, we cannot be sure of our ability to raise additional capital or debt, if needed, on terms acceptable to us. Any diminished ability to raise additional capital or debt, if needed, could adversely affect our business and our ability to implement our business plan, capital plan and strategic goals, including the financing of acquisitions and joint ventures and our efforts to maintain regulatory compliance.

Any downgrades in our credit ratings, or an actual or perceived reduction in our financial strength, could adversely affect our borrowing costs, capital costs and liquidity position and cause reputational harm.

Major independent rating agencies publish credit ratings for our debt obligations based on their evaluation of a number of factors, some of which relate to our performance and other corporate developments, including financings, acquisitions and joint ventures, and some of which relate to general industry conditions. We anticipate that the rating agencies will continue to review our ratings regularly based on our consolidated results of operations and developments in our businesses, including regulatory considerations such as resolution planning. One or more of the major independent credit rating agencies have in the past downgraded, and may in the future downgrade, our credit ratings, or have negatively revised their outlook for our credit ratings. The current market and regulatory environment and our exposure to financial institutions and other counterparties, including sovereign entities, increase the risk that we may not maintain our current ratings, and we cannot provide assurance that we will continue to maintain our current credit ratings. Downgrades in our credit ratings may adversely affect our borrowing costs, our capital costs and our ability to raise capital and, in turn, our liquidity. A failure to maintain an acceptable credit rating may also preclude us from being competitive in various 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, due to the effects of market or regulatory developments, announced or rumored business developments, consolidated results of operations, a decline in our stock price or a downgrade to our 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 service we provide to them or seek to transfer the business, in whole or in part, to other service providers or our prospective clients may select other service providers. Any, or all of these may have adverse effects on our business and reputation.

The risk that we may be perceived as less creditworthy than other market participants is higher as a result of recent market developments, which include an environment in which the consolidation, and in some instances failure, of financial institutions, including major global financial institutions, has resulted in a smaller number of much 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 materially compromised. 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.

Compliance and Regulatory Risks

Our business and capital-related activities, including our ability to return capital to shareholders and repurchase our capital stock, may be adversely affected by our implementation of regulatory capital and liquidity standards that we must meet or as a result of regulatory capital stress testing.

Basel III and Dodd-Frank Act

We are required to calculate our risk-based capital ratios under both the Basel III advanced approaches and the Basel III standardized approach, and we are subject to the more stringent of the risk-based capital ratios calculated under the advanced approaches and those calculated under the standardized approach in the assessment of our capital adequacy.

In implementing various aspects of these capital regulations, we are making interpretations of the regulatory intent. The Federal Reserve may determine that we are not in compliance with the capital rules and may require us to take actions to come into compliance that could adversely affect our business operations, our regulatory capital structure, our capital ratios or our financial performance, or otherwise restrict our growth plans or strategies. In addition, banking regulators could change the Basel III rule or their interpretations as they apply to us, including changes to these standards or interpretations made in regulations implementing provisions of the Dodd-Frank Act, which could adversely affect us and our ability to comply with the Basel III rule. On September 7, 2022, the Federal Reserve's Vice Chair For Supervision stated that the Federal Reserve was undertaking a holistic review of U.S. capital requirements that will help the regulator consider adjustments to the current framework. In addition, on September 9, 2022, the U.S. Agencies reaffirmed their commitment to implementing revised regulatory capital requirements that align with the final set of Basel III standards (Basel IV package) issued by the Basel Committee on Banking Supervision in December 2017. They intend to seek public comments on a joint proposed rule in the coming months.

Along with the Basel III rule, banking regulators also introduced additional requirements, such as the SLR, LCR and the NSFR, each of which presents compliance risks.

For example, these regulatory requirements could have a material effect on our business activities, including the management and composition of our investment securities portfolio and our ability to extend credit through committed facilities, loans to our clients or our principal securities lending activities as the structure of our balance sheet changes. In addition, further capital and liquidity requirements are being implemented or are under consideration by U.S. and international banking regulators. Any of these rules, or any additional regulatory initiatives introduced under the current administration, could have a material effect on our capital and liquidity planning and related activities, including the management and composition of our investment securities portfolio and our ability to extend committed contingent credit facilities to our clients. The full effects of these rules, and of other regulatory initiatives related to capital or liquidity, on us and State Street Bank are subject to further regulatory guidance, action or rule-making.

Systemic Importance

As a G-SIB, we are generally subject to the most stringent provisions under the Basel III rule. For example, we are subject to the Federal Reserve's rules on the implementation of capital surcharges for U.S. G-SIBs, and on TLAC, LTD and clean holding company requirements for U.S. G-SIBs which we refer to as the "TLAC rule". For additional information on these requirements, refer to the “Regulatory Capital Adequacy and Liquidity Standards” section under “Supervision and Regulation” in Business in this Form 10-K.

Not all of our competitors have similarly been designated as systemically important nor are all of them subject to the same degree of regulation as a bank or financial holding company, and therefore some of our competitors are not subject to the same additional capital requirements.

Supervisory Stress Testing and Capital Planning

We are required by the Federal Reserve to conduct periodic stress testing of our business operations and to develop an annual capital plan and are subject to supervisory stress testing, all as part of the Federal Reserve's stress testing and capital planning processes. The stress testing and capital planning processes, the severity and other characteristics of which may evolve from year-to-year, are used by the Federal Reserve to evaluate our management of capital and the adequacy of our regulatory capital and to determine the SCB that we must maintain above our minimum regulatory capital requirements in order for us to make capital distributions and discretionary bonuses without limitation. The results of the supervisory stress testing process are difficult to predict due, among other things, to the Federal Reserve's use of proprietary stress models that differ from our internal models. The results of the Federal Reserve’s supervisory stress tests may result in an increase in our SCB requirement. The amounts of the planned capital actions in our capital plan in any year, including stock repurchases and dividends, may be substantially reduced from the amounts included in prior capital plans. These reductions may reflect changes in one or more different factors, including our business prospects and related capital needs, our capital position, proposed acquisitions or other uses of capital, the models used in our capital planning process, the supervisory models used by the Federal Reserve to stress our balance sheet, the Federal Reserve’s hypothetical economic scenarios for the supervisory stress testing process, the Federal Reserve’s stress testing instructions and the Federal Reserve’s supervisory expectations for the capital planning process. Any of these potential events could require us, as applicable, to revise our stress-testing or capital-management approaches, resubmit our capital plan or postpone, cancel or alter our planned capital actions. In addition, changes in our business strategy, merger or acquisition activity or uses of capital could result in a change in our capital plan and its associated capital actions, and may require us to resubmit our capital plan to the Federal Reserve, which could prompt the Federal Reserve to

recalculate our SCB requirement. We are also subject to asset quality reviews and stress testing by the ECB and in the future we may be subject to similar reviews and testing by other regulators.

Our implementation of capital and liquidity requirements may not be approved or may be objected to by the Federal Reserve, and the Federal Reserve may impose capital requirements in excess of our expectations or require us to maintain levels of liquidity that are higher than we may expect and which may adversely affect our consolidated revenues. In the event that our implementation of capital and liquidity requirements under regulatory initiatives or our current capital structure are determined not to conform with current and future capital requirements, our ability to deploy capital in the operation of our business or our ability to distribute capital to shareholders or to repurchase our capital stock may be constrained, and our business may be adversely affected. In addition, we may choose to forgo business opportunities, due to their impact on our capital plan or stress tests, including our SCB requirement. Likewise, in the event that regulators in other jurisdictions in which we have banking subsidiaries determine that our capital or liquidity levels do not conform with current and future regulatory requirements, our ability to deploy capital, our levels of liquidity or our business operations in those jurisdictions may be adversely affected.

For additional information about the above matters, refer to “Regulatory Capital Adequacy and Liquidity Standards” section under "Supervision and Regulation" in Business and “Capital” section under "Financial Condition" in our Management's Discussion and Analysis in this Form 10-K.

We face extensive and changing government regulation in the U.S. and in non-U.S. jurisdictions in which we operate, which may increase our costs and expose us to risks related to compliance.

Most of our businesses are subject to extensive regulation by multiple regulatory bodies, and many of the clients to which we provide services are themselves subject to a broad range of regulatory requirements. These regulations may affect the scope of, and the manner and terms of delivery of, our services. For example, potential changes in the regulation of money market funds have the potential to alter the marketplace for and increase the complexity and costs of providing services to, those funds. As a financial institution with substantial international operations, we are subject to extensive regulation and supervisory oversight, both inside and outside of the U.S. This regulation and supervisory oversight affects, among other things, the scope of our activities and client services, our capital and organizational structure, our ability to fund the operations of our subsidiaries, our lending practices, our dividend policy, our common share repurchase actions, the manner in which we market our services, our acquisition activities and our interactions with foreign regulatory agencies and officials.

In particular, we are registered with the Federal Reserve as a bank holding company pursuant to the Bank Holding Company Act of 1956. The Bank Holding Company Act generally limits the activities in which we and our non-banking subsidiaries may engage to managing or controlling banks and to activities considered to be closely related to banking. As a bank holding company that has elected to be treated as a financial holding company under the Bank Holding Company Act, we and some of our non-banking subsidiaries may also engage in a broader range of activities considered to be “financial in nature.” Financial holding company status may be denied if we and our banking subsidiaries do not remain well capitalized and well managed or fail to comply with Community Reinvestment Act obligations. Currently, under the Bank Holding Company Act, we may not be able to engage in new activities or acquire shares or control of other businesses.

We are unable to predict what, if any, changes to the regulatory environment may be enacted by Congress, which beginning in 2023 will be subject to Democratic control in the Senate and Republican control in the House of Representatives, or the presidential administration and what the impact of any such changes will be on our results of operations or financial condition, including increased expenses or changes in the demand for our services or our ability to engage in transactions to expand our business, or on the U.S.-domestic or global economies or financial markets.

Moreover, the current presidential administration has made certain changes in the leadership and senior staffs of the federal banking agencies and may make additional changes in the future. Such changes are likely to impact the rulemaking, supervision, examination and enforcement priorities and policies of the agencies. In addition, changes in key personnel at the agencies that regulate such banking organizations, including the federal banking agencies, may result in differing interpretations of existing rules and guidelines and potentially more stringent enforcement and more severe penalties than previously. The potential impact of any changes in agency personnel, policies, priorities and interpretations on the financial services sector, including us, cannot be predicted at this time. Furthermore, fiduciary, anti-competitive, voting power, governance, and other concerns with ESG investment strategies continue to be the subject of legislative and regulatory debate globally, particularly at the federal and state level in the United States, the

outcomes of which could impact both our asset management business and the clients that we service.

We expect that our business will remain subject to extensive regulation and supervision. Several other aspects of the regulatory environment in which we operate, and related risks, are discussed below. Additional information is provided under "Supervision and Regulation" in Business in this Form 10-K.

Resolution Planning

We are required to periodically submit a plan for rapid and orderly resolution in the event of material financial distress or failure commonly referred to as a resolution plan or a living will to the Federal Reserve and the FDIC under Section 165(d) of the Dodd-Frank Act. Through resolution planning, we seek, in the event of insolvency, to maintain State Street Bank's role as a key infrastructure provider within the financial system, while minimizing risk to the financial system and maximizing value for the benefit of our stakeholders. Significant management attention and resources are devoted in an effort to meet regulatory expectations with respect to resolution planning.

In the event of material financial distress or failure, our preferred resolution strategy is the SPOE Strategy. Our resolution plan, including our implementation of the SPOE Strategy with a secured support agreement, may result in significant risks, including that: (1) the SPOE Strategy and the obligations under the related secured support agreement may result in the recapitalization of and/or provision of liquidity to State Street Bank and our other material entities and the commencement of bankruptcy proceedings by the Parent Company at an earlier stage of financial stress than might otherwise occur without such mechanisms in place; (2) as an expected effect of the SPOE Strategy, together with applicable TLAC regulatory requirements, our losses will be imposed on Parent Company shareholders and the holders of long-term debt and other forms of TLAC securities currently outstanding or issued in the future by the Parent Company, as well as on any other Parent Company creditors, before any of our losses are imposed on the holders of the debt securities of State Street Bank or certain of the Parent Company's other operating subsidiaries or any of their depositors or creditors and before U.S. taxpayers are put at risk; (3) there can be no assurance that there would be sufficient recapitalization resources available to ensure that State Street Bank and our other material entities are adequately capitalized following the triggering of the requirements to provide capital and/or liquidity under the secured support agreement; and (4) there can be no assurance that credit rating agencies, in response to our resolution plan or the secured support agreement, will not downgrade, place on negative watch or change their outlook on our debt credit ratings, generally or on specific debt securities. Additional information about the SPOE Strategy, including related risks, is provided under "Recovery and Resolution Planning" in Business in this Form 10-K.

Systemic Importance

Our qualification in the U.S. as a SIFI, and our designation by the Financial Stability Board as a G-SIB, to which certain regulatory capital surcharges may apply, subjects us to incrementally higher capital and prudential requirements, increased scrutiny of our activities and potential additional regulatory requirements or heightened regulatory expectations as compared to those applicable to some of the financial institutions with which we compete as a custodian or asset manager. This qualification and designation also has significantly increased, and may continue to increase, our expenses associated with regulatory compliance, including personnel and systems, as well as implementation and related costs to enhance our programs.

Global and Non-U.S. Regulatory Requirements

The breadth of our business activities, together with the scope of our global operations and varying business practices in relevant jurisdictions, increase the complexity and costs of meeting our regulatory compliance obligations, including in areas that are receiving significant regulatory scrutiny. We are, therefore, subject to related risks of non-compliance, including fines, penalties, lawsuits, regulatory sanctions, difficulties in obtaining governmental approvals, limitations on our business activities or reputational harm, any of which may be significant. For example, the global nature of our client base requires us to comply with complex laws and regulations of multiple jurisdictions relating to economic sanctions and money laundering. In addition, we are required to comply not only with the U.S. Foreign Corrupt Practices Act, but also with the applicable anti-corruption laws of other jurisdictions in which we operate. Beyond the risks of non-compliance, these requirements potentially expose us to increased counterparty credit risk and exposures to our clients created due to complications associated with compliance, including country risk, market risk, restrictions on asset transfers and inability to access assets. Further, our global operating model requires that we comply with information security, resiliency and outsourcing oversight requirements, including with respect to affiliated entities, of multiple jurisdictions and enable our clients to comply with information security, resiliency and outsourcing oversight requirements imposed upon them. Regulatory scrutiny of compliance with these and other laws and regulations is increasing and may, in some respects, impede the implementation of our global operating model that is central to both delivery of client service requirements and cost efficiency. We

sometimes face inconsistent laws and regulations across the various jurisdictions in which we operate. The evolving regulatory landscape may interfere with our ability to conduct our operations, hamper our pursuit of a common global operating model or impede our ability to compete effectively with other financial institutions operating in those jurisdictions which may be subject to different regulatory requirements than apply to us. In particular, non-U.S. regulations and initiatives that may be inconsistent or conflict with current or proposed regulations in the U.S. could create increased compliance and other costs that would adversely affect our business, operations or profitability. Geopolitical events also have the potential to increase the complexity and cost of regulatory compliance.

In addition to U.S. regulatory initiatives, we are further affected by non-U.S. regulatory initiatives, including the implementation of the Basel prudential framework, the E.U. Digital Operational Resilience Act, Corporate Sustainability Reporting Directive and Sustainable Finance Disclosures Regulation, as well as proposals for amending the AIFM Directive and under the Capital Markets Union Action Plan. Recent, proposed or potential regulations in the U.S. and E.U. with respect to the supervision of digital assets and of climate and environmental risks, short-term wholesale funding, such as repurchase agreements or securities lending, or other non-bank finance activities, could also adversely affect not only our own operations but also the operations of the clients to which we provide services. Concerns regarding the liquidity and valuation of prime money market funds and similar products, as well as potential related regulation, may adversely impact the cash management products we offer. In addition, anti-competitive, voting power, governance and other concerns with passive investment strategies continue to be the subject of legislative and regulatory debate which could significantly impact both our asset management business and the clients that we service.

Consequences of Regulatory Environment and Compliance Risks

Domestic and international regulatory reform could limit our ability to pursue certain business opportunities, increase our regulatory capital requirements, alter the risk profile of certain of our core activities and impose additional costs on us, otherwise adversely affect our business, our consolidated results of operations or financial condition and have other negative consequences, including, a reduction of our credit ratings. Different countries may respond to the market and economic environment in different and potentially conflicting manners, which could increase the cost of compliance for us.

The evolving regulatory environment, including changes to existing regulations and the introduction of new regulations, may also contribute to decisions we may make to suspend, reduce or withdraw from existing businesses, activities, markets or initiatives. In addition to potential lost revenue associated with any such suspensions, reductions or withdrawals, any such suspensions, reductions or withdrawals may result in significant restructuring or related costs or exposures.

If we do not comply with governmental regulations, we may be subject to fines, penalties, lawsuits, delays, or difficulties in obtaining regulatory approvals or restrictions on our business activities or harm to our reputation, which may significantly and adversely affect our business operations and, in turn, our consolidated results of operations. The willingness of regulatory authorities to impose meaningful sanctions, and the level of fines and penalties imposed in connection with regulatory violations, have increased substantially since the 2008 financial crisis. Regulatory agencies may, at times, limit our ability to disclose their findings, related actions or remedial measures. Similarly, many of our clients are subject to significant regulatory requirements and retain our services in order for us to assist them in complying with those legal requirements. Changes in these regulations can significantly affect the services that we are asked to provide, as well as our costs.

Adverse publicity and damage to our reputation arising from the failure or perceived failure to comply with legal, regulatory or contractual requirements could affect our ability to attract and retain clients. If we cause clients to fail to comply with any regulatory requirements, we may be liable to them for losses and expenses that they incur. In recent years, regulatory oversight and enforcement have increased substantially, imposing additional costs and increasing the potential risks associated with our operations. If this regulatory trend continues, it could continue to adversely affect our operations and, in turn, our consolidated results of operations and financial condition.

For additional information, see the risk factor *"Our businesses may be adversely affected by government enforcement and litigation."*

We are subject to enhanced external oversight as a result of certain agreements entered into in connection with the resolution of prior regulatory or governmental matters.

In connection with the resolution of certain proceedings relating to our announcement in 2015 that we had incorrectly invoiced clients for certain expenses, in May 2021, we entered into a deferred prosecution agreement with the office of the United States Attorney for the District of Massachusetts under which we agreed to retain an independent compliance monitor for a term of up to two years and

comply with other requirements including cooperation with the government. Responding to the monitor's requests may entail significant cost and management attention and we are, in general, required to implement remediation plans to address any of the monitor's recommendations. These recommendations may require substantial cost and effort to remediate and, even when consistent with our own control enhancement objectives, may reflect differences in approach, timing and cost than we may independently intend. Under the deferred prosecution agreement we also have a heightened obligation promptly to report issues involving potential or alleged fraudulent activities to the DOJ.

As a result of the enhanced inspections and monitoring activities to which we are subject under this agreement, governmental authorities may identify areas in which we may need to take actions, which may be significant, to enhance our regulatory compliance or risk management practices. Such remedial actions may entail significant cost, management attention, and systems development and such efforts may affect our ability to expand our business until such remedial actions are completed. These actions may be in addition to remedial measures required by the Federal Reserve and other financial regulators following examinations as a result of increased prudential expectations regarding our compliance programs, culture and risk management. Our failure to implement enhanced compliance and risk management procedures in a manner and in a time frame deemed to be responsive by the applicable regulatory authority could adversely impact our relationship with such regulatory authority and could lead to restrictions on our activities or other sanctions. Moreover, the identification of new or additional facts and circumstances suggesting inappropriate or non-compliant conduct, whether identified by us, the monitor or a regulatory authority, in the course of an inspection, or independently by us could lead to new governmental proceedings or the re-opening of matters that were previously resolved. The presence of the monitor, as well as governmental programs rewarding whistleblowing, may also increase the instances of current or former employees alleging that certain practices are inconsistent with our legal or regulatory obligations.

Our businesses may be adversely affected by government enforcement and litigation.

The businesses in which we operate are highly-regulated and subject to extensive external scrutiny that may be directed generally to participants in the businesses or markets in which we are involved or may be specifically directed at us, including as a result of whistleblower and qui tam claims. In the course of our business, we are frequently subject to various regulatory, governmental and law enforcement inquiries, investigative demands and subpoenas, and from time to time, our clients, or the government on its own behalf or on behalf of our clients or others, make claims and take legal action relating to, among other things, our performance of our fiduciary, contractual or regulatory responsibilities. Often, the announcement of any such matters, or of any settlement of a claim or action, whether it involves us or others in our industry, may spur the initiation of similar claims by other clients or governmental parties. Regulatory authorities have, and are likely to continue to, initiate cross industry reviews when a material issue is identified at a financial institution. Such inquiries involve costs and management time and may lead to proceedings relating to our own activities.

Regardless of the outcome of any governmental enforcement or litigation matter, responding to such matters is time-consuming and expensive and can divert the attention of senior management. Governmental enforcement and litigation matters can involve claims for disgorgement, demands for substantial monetary damages, the imposition of civil or criminal penalties, and the imposition of remedial sanctions or other required changes in our business practices, any of which could result in increased expenses, loss of client demand for our products or services, or harm to our reputation. The exposure associated with any proceedings that may be threatened, commenced or filed against us could have a material adverse effect on our consolidated results of operations for the period in which we establish a reserve with respect to such potential liability or upon our reputation. In government settlements since the 2008 financial crisis, the fines imposed by authorities have increased substantially and may exceed in some cases the profit earned or harm caused by the regulatory or other breach. For example, in 2021, we paid a $115 million penalty to the office of the United Sates Attorney for the District of Massachusetts to resolve potential criminal claims arising from the invoicing matter. In addition, in connection with the resolution of a transition management matter, we agreed to pay a fine of £22.9 million (approximately $37.8 million) to the U.K. FCA in 2014 and fines of $32.3 million to each of the DOJ and the SEC in 2017. As a further example, we paid an aggregate of $575 million in 2016 to resolve a series of investigations and governmental and private claims alleging that our indirect foreign exchange rates prior to 2008 were not adequately disclosed or were otherwise improper. These matters have also resulted in regulatory focus on the manner in which we charge clients and related disclosures. This focus may lead to increased and prolonged governmental inquiries and client, qui tam and whistleblower claims associated with the amount and disclosure of compensation we receive for our products and services.

Moreover, U.S. and certain international governmental authorities have increasingly brought criminal actions against financial institutions, and criminal prosecutors have increasingly sought and obtained criminal guilty pleas, deferred prosecution agreements or other criminal sanctions from financial institutions. For example, in 2017 we entered into a deferred prosecution agreement with the U.S. Department of Justice in connection with the resolution of a transition management matter and in May 2021, we entered into a deferred prosecution agreement with the office of the United States Attorney for the District of Massachusetts in connection with the invoicing matter and such agreement could increase the likelihood that governmental authorities will seek criminal sanctions against us in pending proceedings or future litigation legal proceedings. Government authorities may also pursue criminal claims against current or former employees, and these matters can, among other things, involve continuing reputational harm to us. For example, four of our former employees were indicted by U.S. prosecutors on charges of criminal conspiracy in connection with their involvement in the transition management matter. Two of these individuals pled guilty, and a third was convicted in 2018.

In many cases, we are required or may choose to report inappropriate or non-compliant conduct to the authorities, and our failure or delay to do so may represent an independent regulatory violation or be treated as an indication of non-cooperation with governmental authorities. Even when we promptly report a matter, we may nonetheless experience regulatory fines, liabilities to clients, harm to our reputation or other adverse effects. Moreover, our settlement or other resolution of any matter with any one or more regulators or other applicable party may not forestall other regulators or parties in the same or other jurisdictions from pursuing a claim or other action against us with respect to the same or a similar matter.

For more information about current contingencies relating to legal proceedings, see Note 13 to the consolidated financial statements in this Form 10-K. The resolution of certain pending or potential legal or regulatory matters could have a material adverse effect on our consolidated results of operations for the period in which the relevant matter is resolved or an accrual is determined to be required, on our consolidated financial condition or on our reputation.

In view of the inherent difficulty of predicting the outcome of legal and regulatory matters, we cannot provide assurance as to the outcome of any pending or potential matter or, if determined adversely against us, the costs associated with any such matter, particularly where the claimant seeks very large or indeterminate damages or where the matter presents novel legal theories, involves a large number of parties, involves the discretion of governmental authorities in seeking sanctions or negotiated resolution or is at a preliminary stage. We may be unable to accurately estimate our exposure to the risks of legal and regulatory contingencies when we record reserves for probable and estimable loss contingencies. As a result, any reserves we establish may not be sufficient to cover our actual financial exposure. Similarly, our estimates of the aggregate range of reasonably possible loss for legal and regulatory contingencies are based upon then-available information and are 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 estimate at any time.

Our businesses may be adversely affected by increased political and regulatory scrutiny of ESG investing practices.

Our Investment Management line of business provides investment management strategies and products that incorporate consideration of ESG factors into the investment decision-making process. For clients and fund investors who want an investment solution that purposefully takes into consideration ESG factors, we offer investment funds and strategies that consider ESG investment risk and/or opportunity determinations as a material component of the investment strategy. Where clients have delegated to us authority to vote securities on their behalf at shareholder meetings of the public companies held in their investment portfolios, we may also take into consideration ESG issues that we believe are relevant to the long-term performance of the companies in which our clients invest. As part of our asset stewardship responsibilities to clients, we regularly engage with representatives of companies held in client portfolios, and these engagements frequently involve discussion of risks and opportunities relating to ESG issues. In connection with these activities, we have also become members of various organizations (e.g., Climate Action 100+, Net Zero Asset Managers Initiative) focused on climate change and other ESG issues.

These ESG-related investment management practices have recently become the subject of significant scrutiny by regulatory agencies and government officials. Certain officials have suggested that ESG-related investing practices may result in violations of law – including antitrust laws – and breaches of fiduciary duty. Views on ESG practices, particularly those related to climate issues, have also become political issues, which can amplify the reputational risks associated with such allegations. We have received information requests from various

government entities in connection with their investigations of ESG investing practices. We are, therefore, subject to related risks of non-compliance with relevant legal requirements, including fines, penalties, lawsuits, regulatory sanctions, difficulties in obtaining governmental approvals, limitations on our business activities or reputational harm, any of which may be significant. We also face potential risks presented by the adoption of proposed rules currently under consideration by the SEC, which would impose new disclosure requirements and naming conventions for ESG-related funds and other ESG-related disclosure obligations on public companies more generally. "Greenwashing" regulations in other jurisdictions could have similar effects. Governmental enforcement action could also spark civil litigation claims by clients and fund shareholders asserting violations of law, fiduciary duties and contractual obligations. Regardless of the outcome of any governmental enforcement or litigation matter, responding to such matters is time-consuming and expensive and can divert the attention of senior management.

Political pressure may also be placed upon governmental clients not to use service providers, such as us, if the legislators or governmental officials in such jurisdictions believe our ESG-related positions are not consistent with the views of such legislators or officials.

Adverse publicity and damage to our reputation arising from the failure or perceived failure to comply with legal, regulatory or contractual requirements could affect our ability to attract and retain clients. Moreover, aside from any governmental enforcement or litigation activity, public criticism levelled at ESG investing practices could result in reduced investor demand for ESG-related products, which could in turn negatively effect our assets under management and resulting fee revenues.

As a general matter, large index providers, such as State Street Global Advisors, have been and are expected to continue to be subject to legislative and regulatory proposals or investigations from both sides of the political spectrum due to a perception that they exert inappropriate influence over publicly traded companies.

For additional information, see the risk factor “Our businesses may be adversely affected by government enforcement and litigation.”

Our efforts to improve our billing processes and practices are ongoing and may result in the identification of additional billing errors.

In 2015, we determined we had incorrectly invoiced some of our Investment Servicing clients for certain expenses. At that time, we began the process of remediating these errors, improving our billing processes and controls in the asset servicing business and other businesses, and testing these improved billing processes and controls. We are continuing to standardize, enhance, and, where necessary, replace and enhance controls and invest in new billing infrastructure. The objective of this billing transformation program is to obtain greater billing accuracy and timeliness. Because of the scale of our business, identifying and remediating all weaknesses and inefficiencies in our billing processes cannot be implemented concurrently. Accordingly, the costs to remediate billing errors which may be discovered in that process, would likely be incurred over a period that we are now unable accurately to determine. As we work through this process, we have discovered and may continue to discover areas where we believe our billing processes need improvement, where we believe we have made billing errors with respect to particular customers and categories of fees and expenses, and where we believe billing arrangements between ourselves and particular customers should be clarified. Such discoveries may lead to increased expense and decreased revenues, the need to remediate prior billing errors, government investigations, or litigation that may materially impact our business, financial results and reputation.

Any theft, loss, damage to or other misappropriation or inadvertent disclosure of, or inappropriate access to, the confidential information we possess could have an adverse impact on our business and could subject us to regulatory actions, litigation and other adverse effects.

Our businesses and relationships with clients are dependent on our ability to maintain the confidentiality of our and our clients' trade secrets and other confidential information (including client transactional and holdings data and personal data about our clients, our clients' clients and our employees). Unauthorized access, or failure of our controls with respect to granting access to our systems, has in the past occurred and may in the future occur, resulting in theft, loss, damage to or other misappropriation of such information. In addition, our and our vendors' personnel have in the past and may in the future inadvertently or deliberately disclose client or other confidential information. Any theft, loss, damage to other misappropriation or inadvertent disclosure of confidential information could have a material adverse impact on our competitive position, our relationships with our clients and our reputation and could subject us to regulatory inquiries, enforcement and fines, civil litigation and possible financial liability or costs. To the extent any of these events involve personal information, the risks of enhanced regulatory scrutiny and the potential financial liabilities are exacerbated, particularly under data protection regulations such as the GDPR.

Our calculations of credit, market and operational risk exposures, total RWA and capital ratios for regulatory purposes depend on data inputs, formulae, models, correlations and assumptions that are subject to change over time, which changes, in addition to our consolidated financial results, could materially impact our risk exposures, our total RWA and our capital ratios from period to period.

To calculate our credit, market and operational risk exposures, our total RWA and our capital ratios for regulatory purposes, the Basel III rule involves the use of current and historical data, including our own loss data and similar information from other industry participants, market volatility measures, interest rates and spreads, asset valuations, credit exposures and the creditworthiness of our counterparties. These calculations also involve the use of quantitative formulae, statistical models, historical correlations and significant assumptions. We refer to the data, formulae, models, correlations and assumptions, as well as our related internal processes, as our "advanced systems." While our advanced systems are generally quantitative in nature, significant components involve the exercise of judgment based on, among other factors, our and the financial services industry's evolving experience. Any of these judgments or other elements of our advanced systems may not, individually or collectively, precisely represent or calculate the scenarios, circumstances, outputs or other results for which they are designed or intended. Collectively, they represent only our estimate of associated risk.

In addition, our advanced systems are subject to update and periodic revalidation in response to changes in our business activities and our historical experiences, forces and events experienced by the market broadly or by individual financial institutions, changes in regulations and regulatory interpretations and other factors, and are also subject to continuing regulatory review and approval. For example, a significant operational loss experienced by another financial institution, even if we do not experience a related loss, could result in a material change in the output of our advanced systems and a corresponding material change in our risk exposures, our total RWA and our capital ratios compared to prior periods. An operational loss that we experience could also result in a material change in our capital requirements for operational risk under the advanced approaches, depending on the severity of the loss event, its characterization among the seven Basel-defined UOM, and the stability of the distributional approach for a particular UOM. This change in our capital requirements could be without direct correlation to the effects of the loss event or the timing of such effects on our results of operations. Due to the influence of changes in our advanced systems, whether resulting from changes in data inputs, regulation or regulatory supervision or interpretation, specific to us or more general market, or individual financial institution-specific, activities or experiences, or other updates or factors, we expect that our advanced systems and our credit, market and operational risk exposures, our total RWA and our capital ratios calculated under the Basel III rule will change, and may be volatile, over time, and that those latter changes or volatility could be material as calculated and measured from period to period.

Changes in accounting standards may adversely affect our consolidated financial statements.

New accounting standards, or changes to existing accounting standards, resulting both from initiatives of the FASB as well as changes in the interpretation of existing accounting standards potentially could affect our consolidated results of operations, cash flows and financial condition. These changes can materially affect how we record and report our consolidated results of operations, cash flows, financial condition and other financial information. In some cases, we could elect, or be required, to apply a new or revised standard retroactively, resulting in the revised treatment of certain transactions or activities, and, in some cases, the revision of our consolidated financial statements for prior periods. For additional information regarding changes in accounting standards, refer to the "Recent Accounting Developments" section of Note 1 to the consolidated financial statements in this Form 10-K.

Changes in tax laws, rules or regulations, challenges to our tax positions with respect to historical transactions, and changes in the composition of our pre-tax earnings may increase our effective tax rate and thus adversely affect our consolidated financial statements.

Our businesses can be directly or indirectly affected by new tax legislation, the expiration of existing tax laws or the interpretation of existing tax laws worldwide. The U.S. federal and state governments, including Massachusetts, and jurisdictions around the world continue to review and enact proposals to amend tax laws, rules and regulations, including those related to corporate minimum taxes, applicable to our businesses that could have a negative impact on our capital or after-tax earnings. In the normal course of our business, we are subject to review by U.S. and non-U.S. tax authorities. A review by any such authority could result in an increase in our recorded tax liability. In addition to the aforementioned risks, our effective tax rate is dependent on the nature and geographic composition of our pre-tax earnings and could be negatively affected by changes in these factors.

We could face liabilities for withholding and other non-income taxes as a result of tax authority examinations.

In addition to income tax, we are at present, and in the future will be, under audit or other examination, and litigation or other dispute resolution proceedings, with U.S. and non-U.S. tax authorities regarding State Street Corporation non-income-based tax matters. Our interpretations or application of tax laws and regulations, including with respect to withholding, transfer, wage, use, stamp, value added, service and other non-income taxes, could differ from that of the relevant governmental taxing authority, or we may experience timing or other compliance deficiencies in connection with our efforts to comply with applicable tax laws and regulations, which could result in the requirement to pay additional taxes, penalties and/or interest, which could be material. Our tax exposure may also be impacted by tax positions taken by our clients and counterparties.

The market transition away from the use of the London Interbank Offered Rate (LIBOR) and other reference rates affected by reference rate reform as interest rate benchmarks may impose additional costs on us and may expose us to increased operational, model and financial risk.

Regulators globally have mandated that banks and other regulated financial institutions stop using the London Interbank Offered Rate (LIBOR - a floating benchmark interest rate for each of five major currencies) for all new financial contracts after December 31, 2021, with certain narrow exceptions. Legacy LIBOR contracts which remain outstanding after December 31, 2021 must be remediated by market participants ahead of applicable deadlines using various mechanisms, including amendment, refinancing, implementation of industry protocols and fallback rate provisions, and if applicable, remedial legislation at the national level and rules promulgated thereunder. Multiple new alternative reference rates and related conventions have been developed for various financial products and national currencies, including for derivatives contracts, loans and cash products.

Our failure or inability to timely plan and implement an effective LIBOR transition program to maintain operational and service continuity and to minimize the economic impact for our clients, ourselves and other stakeholders could negatively impact our business and financial performance. Those dependencies include, without limitation, LIBOR-based securities and loans held in our investment portfolio, LIBOR-based preferred stock and long-term debt issued by us, and LIBOR-based client fee schedules and deposit pricing. Also, to mitigate any potential weaknesses in the underlying models, inadequate assumptions or reliance on poor or inaccurate data, our internal models which support decision making and risk management have been adjusted.

Assets held by our customers in the investment portfolios that we service, or in the investment portfolios that we manage for others, may have LIBOR-based terms. As such, we must enhance our processes and systems to account for new alternative reference rates-based instruments and products as they come to market, the transition of existing LIBOR-based instruments to their fallback language, and uncertainty as to how such instruments should be valued where such fallback language or the applicability of remedial legislation is unclear. These process and system requirements could adversely

impact our business, which in some instances is dependent on critical inputs from third parties, who themselves must timely adapt to market changes. Failure to implement the terms of those instruments in a manner consistent with customer expectations could lead to disputes and operational issues.

Failure or perceived failure to adequately manage the LIBOR transition could also affect our ability to attract and retain clients. Uncertainty relative to external developments necessary for the market transition away from LIBOR but outside of our control, such as the implementation of remedial legislation and regulatory decisions, could further increase the costs and risks of the transition for us or our subsidiaries.

Operational Risks

Our controls and procedures may fail or be circumvented, our risk management policies and procedures may be inadequate, and operational risks could adversely affect our consolidated results of operations.

We have in the past failed and may in the future fail to identify and manage risks related to a variety of aspects of our business, including cybersecurity, information technology risk, operational risk and resiliency, interest rate risk, foreign exchange risk, trading risk, fiduciary risk, legal and compliance risk, liquidity risk and credit risk. We have adopted various controls, procedures, policies and systems to monitor and manage risk. We cannot provide assurance that those controls, procedures, policies and systems are or will be adequate to identify and manage internal and external risks, including risks related to service providers, in our various businesses. The risk of individuals, either employees or contractors, engaging in conduct harmful or misleading to clients or to us, such as consciously circumventing established control mechanisms to exceed trading or investment management limitations, committing fraud or improperly selling products or services to clients, is particularly challenging to manage through a control framework. In addition, we are subject to increased resiliency risk, requiring continuous reinvestment, enhancement and improvement in and of our information technology and operational infrastructure, controls and personnel which may not be effectively or timely deployed or integrated. Moreover, the financial and reputational impact of control or conduct failures can be significant. Persistent or repeated issues with respect to controls, information technology and operational resiliency or individual conduct have raised and may in the future raise concerns among regulators regarding our culture, governance and control environment. There can be no assurance that our efforts to address such risks will be effective. While we seek to contractually limit our financial exposure to operational risk, the degree of protection that we are able to achieve varies, and our potential exposure may be greater than the revenue we anticipate that we will earn from servicing our clients.

In addition, our businesses and the markets in which we operate are continuously evolving. We will need to make additional investments to develop the operational infrastructure and to enhance our compliance and risk management capabilities to support our businesses through their evolution, which may increase the operating expenses of such businesses. Moreover, we may fail to identify or fully understand the implications of changes in our businesses or the financial markets and fail to adequately or timely enhance our risk framework to address those changes. To the extent that our risk framework is ineffective, either because it fails to keep pace with changes in the financial markets, regulatory or industry requirements, technology and cybersecurity developments, 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, and subject to regulatory inquiry or action against us.

Operational risk is inherent in all of our business activities. As a leading provider of services to institutional investors, we provide a broad array of services, including research, investment management, trading services and investment servicing that expose us to operational risk. In addition, these services generate a broad array of complex and specialized servicing, confidentiality and fiduciary requirements, many of which involve the opportunity for human, systems or process errors. We face the risk that the control policies, procedures and systems we have established to comply with our operational or security requirements will fail, will be inadequate or will become outdated. We also face the potential for loss resulting from inadequate or failed internal processes, employee supervision or monitoring mechanisms, service-provider processes or other systems or controls, which could materially affect our future consolidated results of operations. Additionally, several of our processes for specific clients, often large clients with a high volume and large magnitude of transactions and activities, are bespoke and require additional attention, oversight and controls which involve an enhanced risk of episodic or continued failure as well as additional costs. Given the volume and magnitude of transactions we process on a daily basis, operational losses represent a potentially significant financial risk for our business. Operational errors that result in us remitting funds to a failing or bankrupt entity may be irreversible, and may subject us to losses. In addition to the financial losses associated with operational

errors, these errors present the risk of client dissatisfaction and loss and reputational risk.

We may also be subject to disruptions from external events that are wholly or partially beyond our control, which could cause delays or disruptions to operational functions, including information processing and financial market settlement functions. In addition, our clients, vendors and counterparties could suffer from such events. Should these events affect us, or the clients, vendors or counterparties with which we conduct business, our consolidated results of operations could be negatively affected.

When we record balance sheet accruals for probable and estimable loss contingencies related to operational losses, we may be unable to accurately estimate our potential exposure, and any accruals we establish to cover operational losses may not be sufficient to cover our actual financial exposure, which could have a material adverse effect on our consolidated results of operations.

Cost shifting to non-U.S. jurisdictions and outsourcing may expose us to increased operational risk and reputational harm and may not result in expected cost savings.

We manage expenses by migrating certain business processes and business support functions to lower-cost geographic locations, such as India, Poland and China, and by outsourcing to vendors and joint ventures in various jurisdictions. This effort exposes us to the risk that we may not effectively transition the relevant processes and activities, and that we may not maintain service quality, control and effective management or business resiliency within these operations during and after transitions. These migrations also involve risks that our outsourcing vendors or joint ventures 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 outsourcing providers, joint ventures and other third parties. Our geographic footprint also exposes us to the relevant macroeconomic, political, legal and similar risks generally involved in doing business in the jurisdictions in which we establish lower-cost locations or joint ventures or in which our outsourcing vendors locate their operations, particularly in locations where we have a concentration of our operational activities, such as India, Poland and China. The increased elements of risk that arise from certain operating processes being conducted in some jurisdictions could lead to an increase in reputational risk. During periods of transition of operations, greater operational risk and client concerns exist with respect to maintaining a high level of service delivery and business continuity. The extent and pace at which we are able to move functions to lower-cost locations, joint ventures and outsourcing providers may also be affected by political, regulatory and client acceptance issues, including with respect to data use, storage and security. Such relocation or outsourcing of functions also entails costs, such as technology, real estate and restructuring expenses, which may offset or exceed the expected financial benefits of the relocation or outsourcing. In addition, the financial benefits of lower-cost locations and of outsourcing may diminish over time or could be offset in the event that the U.S. or other jurisdictions impose tax, trade barrier or other measures which seek to discourage the use of lower cost jurisdictions.

Any failures of or damage to, attack on or unauthorized access to our information technology systems or facilities or disruptions to our continuous operations, including the systems, facilities or operations of third parties with which we do business, such as resulting from cyber-attacks, could result in significant costs and reputational damage and impacts our ability to conduct our business activities.

Our businesses depend on information technology infrastructure, both internal and external, to, among other things, record and process a large volume of increasingly complex transactions and other data, in many currencies, on a daily basis, across numerous and diverse markets and jurisdictions and to maintain that data securely. In recent years, several financial services firms have 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. We also have been subjected to cyber-attacks, and although we have not to our knowledge suffered a material breach or suspension of our systems, it is possible that we could suffer such a breach or suspension in the future or that we may be unaware of a prior attack. Cyber-threats are sophisticated and continually evolving. We may not implement effective systems and other measures to effectively identify, detect, prevent, mitigate, recover from or remediate the full diversity of cyber-threats or improve and adapt such systems and measures as such threats evolve and advance.

A cybersecurity incident, or a failure to protect our technology infrastructure, systems and information and our clients and others' information against cybersecurity threats, could result in the theft, loss, unauthorized access to, disclosure, misuse or alteration of information, system failures or outages or loss of access to information. The expectations of our clients and regulators with respect to the resiliency of our systems and the adequacy of our control environment with respect to such systems has and is expected to increase as the risk of cyber-attacks,

which is presently elevated due to the current geopolitical environment and evolving alternative work arrangements, and the consequences of those attacks become more pronounced. We may not be successful in meeting those expectations or in our efforts to identify, detect, prevent, mitigate and respond to such cyber-incidents or for our systems to recover in a manner that does not disrupt our ability to provide services to our clients. The failure to maintain an adequate technology infrastructure and applications with effective cybersecurity controls could impact operations, adversely affect our financial results, result in loss of business, damage our reputation or impact our ability to comply with regulatory obligations, leading to regulatory fines and sanctions. We may be required to expend significant additional resources to modify, investigate or remediate vulnerabilities or other exposures arising from cybersecurity threats.

Our computer, communications, data processing, networks, backup, business continuity, disaster recovery or other operating, information or technology systems, facilities and activities have suffered and in the future may suffer disruptions or otherwise 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 can adversely affect our ability to process transactions, provide services or maintain systems availability, maintain information security, compliance and internal controls or otherwise appropriately conduct our business activities. For example, in addition to cyber-attacks, there could be sudden increases in transaction or data volumes, electrical or telecommunications outages, natural disasters, or employee or contractor error or malfeasance. Third parties may also attempt to place individuals within State Street or fraudulently induce employees, vendors, clients or other users of our systems to disclose sensitive information in order to gain access to our data or that of our clients or other parties. Any such disruptions or failures may require us, among other things, to reconstruct lost data (which may not be possible), reimburse our clients' costs associated with such disruption or failure, result in loss of client business or damage our information technology infrastructure or systems or those of our clients or other parties. While we have not in the past suffered material harm or adverse effects from such disruptions or failures, we may not successfully prevent, respond to or recover from such disruptions or failures in the future, and any such disruption or failure could adversely impact our ability to conduct our businesses, damage our reputation and cause losses, potentially materially.

The third parties with which we do business, which facilitate our business activities, to whom we outsource operations or other activities, from whom we receive products or services or with whom we otherwise engage or interact, including financial intermediaries and technology infrastructure and service providers, are also susceptible to the foregoing risks (including the third parties with which they are similarly interconnected or on which they otherwise rely), and our or their business operations and activities have been and may in the future be adversely affected, 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 particular, we, like other financial services firms, will continue to face increasing cyber-threats, including computer viruses, malicious code, distributed denial of service attacks, phishing attacks, ransomware, hacker attacks, limited availability of services, unauthorized access, 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. These and similar types of threats are occurring globally with greater frequency and intensity, and we may not anticipate or implement effective preventative measures against, or identify and detect one or more, such threats, particularly because the techniques used change frequently or may not be recognized until after they are launched. Our status as a G-SIB likely increases the risk that we are targeted by such cybersecurity threats. In addition, some of our service offerings, such as data warehousing, may also increase the risk we are, and the consequences of being, so targeted. We may be required to expend significant additional resources to modify, investigate or remediate vulnerabilities or other exposures arising from cybersecurity threats. We therefore could experience significant related costs and legal and financial exposures, including lost or constrained ability to provide our services or maintain systems availability to clients, regulatory inquiries, enforcements, actions and fines, litigation, damage to our reputation or property and enhanced competition.

Due to our dependence on technology and the important role it plays in our business operations, we are attempting to improve and update our information technology infrastructure, among other things: (1) as some of our systems are approaching the end of their useful life, are redundant or do not share data without reconciliation; (2) to be more efficient, meet increasing client and regulatory security, resiliency and other expectations and support opportunities of

growth; and (3) to enhance resiliency and maintain business continuity. Updating these systems involves material costs and often involves implementation, integration and security risks, including risks that we may not adequately anticipate the market or technological trends, regulatory expectations or client needs or experience unexpected challenges that could cause financial, reputational and operational harm. Failing to properly respond to and invest in changes and advancements in technology can limit our ability to attract and retain clients, prevent us from offering similar products and services as those offered by our competitors, impair our ability to maintain continuous operations, inhibit our ability to meet regulatory requirements and subject us to regulatory inquires.

Long-term contracts expose us to pricing and performance risk.

We frequently enter into long-term client servicing contracts in our Investment Servicing business, including with respect to our State Street Alpha services. These include outsourcing and other core services contracts and can involve information technology development. These arrangements generally set forth our fee schedule for the term of the contract and, absent a change in service requirements, do not permit us to re-price the contract for changes in our costs or for market pricing. The long-term contracts for these relationships require, in some cases, considerable up-front investment by us, including technology and conversion costs, and carry the risk that pricing for the products and services we provide might not prove adequate to generate expected operating margins over the term of the contracts.

The profitability of these contracts is largely a function of our ability to accurately calculate pricing for our services, efficiently assume our contractual responsibilities in a timely manner, control our costs and maintain the relationship with the client for an adequate period of time to recover our up-front investment. Our estimate of the profitability of these arrangements can be adversely affected by declines in or inaccurate projections of the assets under the clients' management, whether due to general declines in the securities markets or client-specific issues. In addition, the profitability of these arrangements may be based on our ability to cross-sell additional services to these clients, and we may be unable to do so. In addition, such contracts may permit early termination or reduction in services in the event that certain service levels are not met, which termination or service reduction may result in loss of upfront investment in onboarding the client.

Performance risk exists in each contract, given our dependence on successful conversion and implementation onto our own operating platforms of the service activities provided. Our failure to meet specified service levels or implementation timelines may also adversely affect our revenue from such arrangements, or permit early termination of the contracts by the client. If the demand for these types of services were to decline, we could see our revenue decline.

Our businesses may be negatively affected by adverse publicity or other reputational harm.

Our relationship with many of our clients is predicated on our reputation as a fiduciary and a service provider that adheres to the highest standards of ethics, service quality and regulatory compliance, as well as a leading provider of the products and services we offer. Adverse publicity, regulatory actions or fines, litigation, operational failures, loss of client opportunities or market share or the failure to meet client expectations or fiduciary or other obligations could materially and adversely affect our reputation, our ability to attract and retain clients or key employees or our sources of funding for the same or other businesses. For example, over the past decade we have experienced adverse publicity with respect to our indirect foreign exchange trading, and this adverse publicity has contributed to a shift of client volume to other foreign exchange execution methods. Similarly, governmental actions and reputational issues in our transition management business in the U.K. have adversely affected our transition management revenue and, with criminal convictions or guilty pleas of three of our former employees in 2018 and the deferred prosecution agreement we entered into in early 2017 and the related SEC settlement, these effects have the potential to continue. The client invoicing matter we announced in late 2015, and the related deferred prosecution agreement entered into in May 2021, have had similar effects. For additional information about these matters, see the risk factor "*Our businesses may be adversely affected by government enforcement and litigation.*"

Preserving and enhancing our reputation also depends on maintaining systems, procedures and controls that address known risks and regulatory requirements, as well as our ability to timely identify, understand and mitigate additional risks that arise due to changes in our businesses and the marketplaces in which we operate, the regulatory environment and client expectations.

We may not be able to protect our intellectual property, and we are subject to claims of third-party intellectual property rights.

Our potential inability to protect our intellectual property and proprietary technology effectively may allow competitors to duplicate our technology and products and may adversely affect our ability to compete with them. To the extent that we do not

protect our intellectual property effectively through patents, maintaining trade secrets or other means in all of the jurisdictions in which we operate or market our products and services, other parties, including former employees, with knowledge of our intellectual property may seek to exploit our intellectual property for their own or others' advantage. In addition, we may infringe on claims of third-party patents, and we may face intellectual property challenges from other parties, including clients or service providers with whom we may engage in the development or implementation of other products, services or solutions or to whose information we may have access for limited permitted purposes but with whom we also compete. The risk of such infringement is enhanced in the current competitive “Fintech” environment, particularly with respect to our development of new products and services containing significant technology elements and dependencies, any of which could become the subject of an infringement claim. We may not be successful in defending against any such challenges or in obtaining licenses to avoid or resolve any intellectual property disputes. Third-party intellectual rights, valid or not, may also impede our deployment of the full scope of our products and service capabilities in all jurisdictions in which we operate or market our products and services.

The quantitative models we use to manage our business may contain errors that result in inadequate risk assessments, inaccurate valuations or poor business and risk management decisions, and lapses in disclosure controls and procedures or internal control over financial reporting could occur, any of which could result in material harm.

We use quantitative models to help manage many different aspects of our businesses. As an input to our overall assessment of capital adequacy, we use models to measure the amount of credit risk, market risk and operational risk we face. We also use models for interest rate risk management and liquidity planning. During the preparation of our consolidated financial statements, we sometimes use models to measure the value of asset and liability positions for which reliable market prices are not available. We also use models to support many different types of business decisions including trading activities, investment, hedging, asset-and-liability management and whether to change business strategy. We also use artificial intelligence and machine learning models to automate or enhance certain business processes. Weaknesses in the underlying model including input data, assumptions, parameters, or implementation, as well as inappropriate model use, could result in unanticipated and adverse consequences, including material loss and material non-compliance with regulatory requirements or expectations. Because of our widespread usage of models, potential weaknesses in our Model Risk Management practices pose an ongoing risk to us.

We also use quantitative models in our risk measurement and may fail to accurately quantify 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 for regulatory purposes may not adequately capture or express the true risk profiles of our businesses. Moreover, as businesses and markets evolve, our measurements may not accurately reflect this evolution. While our risk measures may indicate sufficient capitalization, they may underestimate the level of capital necessary to conduct our businesses.

Additionally, our disclosure controls and procedures may not be effective in every circumstance, and, similarly, it is possible we may identify a material weakness or significant deficiency in internal control over financial reporting. Any such lapses or deficiencies may materially and adversely affect our business and consolidated results of operations or consolidated financial condition, restrict our ability to access the capital markets, require us to expend significant resources to correct the lapses or deficiencies, expose us to regulatory or legal proceedings, subject us to fines, penalties or judgments or harm our reputation.

Our reputation and business prospects may be damaged if our clients incur substantial losses in investment pools that we sponsor or manage or are restricted in redeeming their interests in these investment pools.

We manage assets on behalf of clients in several forms, including in collective investment pools, money market funds, securities finance collateral pools, cash collateral and other cash products and short-term investment funds. Our management of collective investment pools on behalf of clients exposes us to reputational risk and operational losses. If our clients incur substantial investment losses in these pools, receive redemptions as in-kind distributions rather than in cash, or experience significant under-performance relative to the market or our competitors' products, our reputation could be significantly harmed, which harm could significantly and adversely affect the prospects of our associated business units. Because we often implement investment and operational decisions and actions over multiple investment pools to achieve scale, we face the risk that losses, even small losses, may have a significant effect in the aggregate.

Within our Investment Management business, we manage investment pools, such as mutual funds and collective investment funds that generally offer our clients the ability to withdraw their investments on short notice, generally daily or monthly. This feature requires that we manage those pools in a manner that takes into account both maximizing the long-term return on the investment pool and retaining sufficient liquidity to meet reasonably anticipated liquidity requirements of our clients. The importance of maintaining liquidity varies by product type, but it is a particularly important feature in money market funds and other products designed to maintain a constant net asset value of $1.00. In the past, we have imposed restrictions on cash redemptions from the agency lending collateral pools, as the per-unit market value of those funds' assets had declined below the constant $1.00 the funds employ to effect purchase and redemption transactions. Both the decline of the funds' net asset value below $1.00 and the imposition of restrictions on redemptions had a significant client, reputational and regulatory impact on us, and the recurrence of such or similar circumstances in the future could adversely impact our consolidated results of operations and financial condition. We have also in the past continued to process purchase and redemption of units of investment products designed to maintain a constant net asset value at $1.00 although the fair market value of the fund’s assets were less than $1.00. If in the future we were to continue to process purchases and redemptions from such products at $1.00 when the fair market value of our collateral pools' assets is less than $1.00, we could be exposed to significant liability.

If higher than normal demands for liquidity from our clients were to occur, managing the liquidity requirements of our collective investment pools could become more difficult. If such liquidity problems were to recur, our relationships with our clients may be adversely affected, and, we could, in certain circumstances, be required to consolidate the investment pools into our consolidated statement of condition, levels of redemption activity could increase, and our consolidated results of operations and business prospects could be adversely affected. In addition, if a money market fund that we manage were to have unexpected liquidity demands from investors in the fund that exceeded available liquidity, the fund could be required to sell assets to meet those redemption requirements, and selling the assets held by the fund at a reasonable price, if at all, may then be difficult.

Because of the size of the investment pools that we manage, we may not have the financial ability or regulatory authority to support the liquidity or other demands of our clients. Any decision by us to provide financial support to an investment pool to support our reputation in circumstances where we are not statutorily or contractually obligated to do so could result in the recognition of significant losses, could adversely affect the regulatory view of our capital levels or plans and could, in some cases, require us to consolidate the investment pools into our consolidated statement of condition. Any failure of the pools to meet redemption requests, or under- performance of our pools relative to similar products offered by our competitors, could harm our business and our reputation.

We may incur losses arising from our investments in sponsored investment funds, which could be material to our consolidated results of operations in the periods incurred.

In the normal course of business, we manage various types of sponsored investment funds through State Street Global Advisors. The services we provide to these sponsored investment funds generate management fee revenue, as well as servicing fees from our other businesses. From time to time, we may invest in the funds, which we refer to as seed capital, in order for the funds to establish a performance history for newly launched strategies. These funds may meet the definition of variable interest entities, as defined by U.S. GAAP, and if we are deemed to be the primary beneficiary of these funds, we may be required to consolidate these funds in our consolidated financial statements under U.S. GAAP. The funds follow specialized investment company accounting rules which prescribe fair value for the underlying investment securities held by the funds.

In the aggregate, we expect any financial losses that we realize over time from these seed investments to be limited to the actual amount invested in the consolidated fund. However, in the event of a fund wind-down, gross gains and losses of the fund may be recognized for financial accounting purposes in different periods during the time the fund is consolidated but not wholly owned. Although we expect the actual economic loss to be limited to the amount invested, our losses in any period for financial accounting purposes could exceed the value of our economic interests in the fund and could exceed the value of our initial seed capital investment.

In instances where we are not deemed to be the primary beneficiary of the sponsored investment fund, we do not include the funds in our consolidated financial statements. Our risk of loss associated with investment in these unconsolidated funds primarily represents our seed capital investment, which could become realized as a result of poor investment performance. However, the amount of loss we may recognize during any period would be limited to the carrying amount of our investment.

Climate change may increase the frequency and severity of major weather events and the ongoing transition to a low carbon economy may drive regulatory and business model change that could adversely affect our business operations and resiliency, our clients, our counterparties or other financial market participants and could adversely affect our consolidated results of operations and financial condition.

Our businesses and the activities of our clients, our counterparties and financial market participants on which we and they rely could be adversely affected by major weather events, changing climate patterns or other disruptions caused by climate change affecting the regions, countries and locations in which we or they have operations or other interests. Potential events or disruptions of this nature include significant rainfall, flooding, increased frequency or intensity of wildfires, prolonged drought, rising sea levels and rising heat index. These events or disruptions, alone or in combination, also have the potential to strain or deplete infrastructure and response capabilities with respect to other weather events, such as hurricanes and other storms. The occurrence of any one or more of these events may negatively affect our or our clients', our counterparties' or financial markets participants' (including providers of financial market infrastructure's) facilities, operations or personnel or may otherwise disrupt our or their business activities and resiliency capabilities, including our or their provision of products and services or the value of our or their portfolio investments, perhaps materially. These consequences, including a reduction in asset values affecting the levels of our AUC/A or AUM and repricing of credit risk of our counterparties or reflected in our portfolio assets, could materially adversely affect our results of operations or financial condition.

In addition, impacts associated with climate change-related legislative and regulatory initiatives and the transition to a low carbon economy, including meeting new regulatory expectations, retrofitting of assets, purchasing carbon credits or paying carbon taxes, may result in operational changes and additional expenditures that could adversely affect us. Our reputation and business prospects may also be damaged if we do not, or are perceived not to, effectively prepare for the potential business and operational opportunities and risks associated with climate change, including through the development and marketing of effective and competitive new products and services designed to address our clients' climate risk-related needs. These risks include negative market perception, diminished sales effectiveness and regulatory and litigation consequences associated with "greenwashing" claims or driven by association with clients, industries or products that may be inconsistent with our stated positions on climate change issues.

We may incur losses as a result of unforeseen events including terrorist attacks, natural disasters, the emergence of a new pandemic or acts of embezzlement.

Acts of terrorism, natural disasters or the emergence of a new pandemic could significantly affect our business. We have instituted disaster recovery and continuity plans to address risks from terrorism, natural disasters and pandemics; however, anticipating or addressing all potential contingencies is not possible for events of this nature. Acts of terrorism, either targeted or broad in scope, or natural disasters could damage our physical facilities, harm our employees and disrupt our operations. A pandemic, or concern about a possible pandemic, could lead to operational difficulties and impair our ability to manage our business. Acts of terrorism, natural disasters and pandemics could also negatively affect our clients, counterparties and service providers, as well as result in disruptions in general economic activity and the financial markets.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

As of December 31, 2022 and 2021, we occupied a total of approximately 5.2 million and 6.2 million square feet, respectively, of office space, data centers and related facilities worldwide, of which approximately 4.5 million and 5.2 million square feet, respectively, were leased. Our headquarters is located at State Street Financial Center, One Lincoln Street, Boston, Massachusetts. Various divisions of our two lines of business as well as support functions occupy approximately 400 thousand square feet leased in this building, which is a non cancellable lease that expires in September 2023. As of December 31, 2022, we have an additional lease that has not yet commenced on approximately 500 thousand square feet at One Congress Street, Boston, Massachusetts. This property will replace the One Lincoln Street property as our headquarters in 2023. An additional approximate 1.4 million square feet is occupied in Eastern Massachusetts of which approximately 700 thousand square feet is owned. Outside the U.S. and Canada, we also occupy other principal leased space to support our operations in EMEA, including Germany, Ireland, Luxembourg, Poland, and the United Kingdom, and in APAC, including China and India. The following table provides information regarding our principal office space, data centers and related facilities by region as of December 31, 2022:

	Number of locations			Approximate Square Footage (in millions)		
	Owned	Leased	Total	Owned	Leased	Total
Americas	1	39	40	0.7	2.0	2.7
Europe/Middle East/Africa	—	35	35	—	1.3	1.3
Asia/Pacific	—	37	37	—	1.2	1.2
Total	1	111	112	0.7	4.5	5.2

We believe that our owned and leased facilities globally are suitable and adequate for our business needs. We do not delineate our facilities by line of business as they are occupied by both. Additional information about our occupancy costs, including commitments under non cancellable leases, is provided in Note 20 to the consolidated financial statements included under Item 8 of this Form 10-K.

ITEM 3. LEGAL PROCEEDINGS

The information required by this Item is provided under "Legal and Regulatory Matters" in Note 13 to the consolidated financial statements in this Form 10-K, and is incorporated herein by reference.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

The following table presents certain information with respect to each of our executive officers as of February 16, 2023.

Name	Age	Position
Ronald P. O'Hanley	66	Chairman and Chief Executive Officer
Eric W. Aboaf	58	Vice Chairman and Chief Financial Officer
Ian W. Appleyard	58	Executive Vice President, Global Controller and Chief Accounting Officer
Andrew J. Erickson	53	Executive Vice President, Chief Productivity Officer and Head of International
Brian Franz	57	Executive Vice President, Chief Information Officer and Head of Enterprise Resiliency
Kathryn M. Horgan	57	Executive Vice President and Chief Human Resources and Citizenship Officer
Bradford Hu	59	Executive Vice President and Chief Risk Officer
Yie-Hsin Hung	60	President and Chief Executive Officer, State Street Global Advisors
Louis D. Maiuri	58	President, Chief Operating Officer and Head of Investment Services
David C. Phelan	65	Executive Vice President, General Counsel and Secretary
John Plansky	57	Executive Vice President and Head of State Street Alpha
Michael L. Richards	64	Executive Vice President and Chief Administrative Officer

All executive officers are appointed by the Board of Directors and hold office at the discretion of the Board. No family relationships exist among any of our directors and executive officers.

Mr. O'Hanley joined State Street in April 2015 and since January 1, 2020 has served as the Chairman of the Board and Chief Executive Officer. Prior to this role Mr. O'Hanley served as President and Chief Executive Officer from January 2019 to December 2020 and President and Chief Operating Officer from November 2017 to December 2018 and served as Vice Chairman from January 1, 2017 to November 2017. He served as the Chief Executive Officer and President of State Street Global Advisors, the investment management arm of State Street Corporation, from April 2015 to November 2017. Prior to joining State Street, Mr. O'Hanley was president of Asset Management & Corporate Services for Fidelity Investments, a financial and mutual fund services corporation, from 2010 to February 2014. From 1997 to 2010, Mr. O'Hanley served in various positions at Bank of New York Mellon, a global banking and financial services corporation, serving as president and chief executive officer of BNY Asset Management in Boston from 2007 to 2010.

Mr. Aboaf joined State Street in December 2016 as Executive Vice President and has served as Executive Vice President and Chief Financial Officer since February 2017. In May 2022, Mr. Aboaf was appointed to the role of Vice Chairman, with expanded responsibility for State Street's Global Markets and Global Credit Finance businesses. Prior to joining State Street, Mr. Aboaf served as chief financial officer of Citizens Financial Group, a financial services and retail banking firm, from April 2015 to December 2016, with responsibility for all finance functions and corporate development. From 2003 to March 2015, he served in several senior management positions for Citigroup, a global investment banking and financial services corporation, including as global treasurer and as the chief financial officer of the institutional client group, which included the custody business.

Mr. Appleyard joined State Street in May 2018 as Executive Vice President, Global Controller and Chief Accounting Officer. Prior to joining State Street, Mr. Appleyard served as managing director in group finance for Credit Suisse, a provider of financial services, from May 2013 to April 2018 and held several senior management positions with Credit Suisse after joining in September 2008. Prior to Credit Suisse, Mr. Appleyard held senior positions at HSBC and JPMorgan.

Mr. Erickson joined State Street in April 1991 and since June 2020 has served as Executive Vice President, Chief Productivity Officer and head of State Street's International business. Prior to this role, he served as Executive Vice President and head of the Global Services business from November 2017 to June 2020. Prior to this role and commencing in June 2016, he served as Executive Vice President and head of Investment Services business in the Americas. Prior to that role, Mr. Erickson was the head of the Global Services business in Asia Pacific from April 2014 to June 2016 and prior to that was head of North Asia for Global Services from 2010 to April 2014. Mr. Erickson has also held several other positions within State Street during his over 25 years with State Street.

Mr. Franz joined State Street in January 2020 as Executive Vice President and Chief Information Officer. Prior to this role, Mr. Franz served as Chief Productivity Officer and Chief Information Officer at Diageo PLC, a British multinational alcoholic beverages company, with responsibility for enterprise operations, technology and business service functions. Prior to joining Diageo in 2008, he was Chief Information Officer at PepsiCo International, and before that in leadership roles at General Electric (GE), including GE Capital, and AT&T.

Ms. Horgan joined State Street in April 2009 and has served as Executive Vice President and Chief Human Resources and Citizenship Officer since March 2017. Prior to this role, she served as Chief Operating Officer for State Street's Global Human Resources division from 2011 to March 2017 and since 2012 has served as an Executive Vice President. Prior to 2011, Ms. Horgan served as the Senior Vice President of Human Resources for State Street Global Advisors. Before joining State Street, Ms. Horgan was the Executive Vice President of human resources for Old Mutual Asset Management, a global, diversified multi-boutique asset management company, from 2006 to 2009.

Mr. Hu joined State Street in November 2021 as Executive Vice President and has served as Executive Vice President and Chief Risk Officer since January 2022. Prior to joining State Street, Mr. Hu was Chief Risk Officer of Citigroup, a global investment banking and financial services corporation, from January 2013 to December 2020, and Chief Risk Officer of Citi Asia-Pacific, from August 2008 to December 2012. Prior to that, Mr. Hu held several senior leadership roles at Morgan Stanley in the Global Equity, Global Capital Markets and Investment Banking divisions.

Ms. Hung joined State Street in December 2022 as President and Chief Executive Officer of State Street Global Advisors. Prior to joining State Street, Ms. Hung served as chief executive officer of New York Life Investment Management (NYLIM), a global investment management business that provides a broad range of fixed income, alternatives, equity and ESG capabilities, from April 2015 to October 2022. Prior to NYLIM, Ms. Hung held a number of leadership positions at Bridgewater Associates and Morgan Stanley.

Mr. Maiuri joined State Street in October 2013 and since May 2022 has served as President and Head of Investment Services. From February 2019 to May 2022, Mr. Maiuri served as Executive Vice President and Chief Operating Officer, and he remains State Street's Chief Operating Officer in his current role. Mr. Maiuri served as Executive Vice President and head of State Street Global Markets from June 2016 to February 2019 and head of State Street Global Exchange from July 2015 to January 2017. From 2013 to July 2015, he led State Street's Securities Finance division. Before joining State Street, Mr. Maiuri served as executive vice president and deputy chief executive officer of asset servicing at BNY Mellon, a global banking and financial services corporation, from 2009 to 2013.

Mr. Phelan joined State Street in 2006 as Executive Vice President and General Counsel. In July 2020, Mr. Phelan’s responsibilities were expanded to include State Street’s regulatory, security and corporate administration functions globally. He also serves as State Street’s Corporate Secretary. Prior to joining State Street, Mr. Phelan served as a senior partner at Wilmer Cutler Pickering Hale and Dorr LLP from 1993 to 2006.

Mr. Plansky joined State Street in January 2017 as head of State Street Global Exchange and since December 2020 has served as Executive Vice President and Head of State Street Alpha. Prior to that role, Mr. Plansky served as Chief Executive Officer of CRD from October 2018 to December 2020. Before joining State Street, Mr. Plansky led the U.S. Strategy business and U.S. Global Platforms business for PricewaterhouseCoopers, an international professional services firm, from April 2014 to November 2016. Prior to the acquisition of Booz & Co. by PricewaterhouseCoopers, he was a senior partner at Booz & Co. leading the technology practice and serving as a senior advisor to global financial institutions.

Mr. Richards joined State Street in June 2014 and since April 2020 has served as Executive Vice President and Chief Administrative Officer. Prior to that role, he served as Executive Vice President and General Auditor from June 2014 to April 2020. Prior to joining State Street, Mr. Richards was a partner at Ernst & Young and was responsible for managing their Banking Capital Markets practice in the United States.

PART II

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

MARKET FOR REGISTRANT'S COMMON EQUITY

Our common stock is listed on the New York Stock Exchange under the ticker symbol STT. There were 2,105 shareholders of record as of January 31, 2023.

In July 2021, our Board approved a common share repurchase program authorizing the purchase of up to $3.0 billion of our common stock from July 15, 2021 through December 31, 2022 (the 2021 Program) . We did not repurchase any common stock during the first three quarters of 2022. In October 2022, we resumed our share repurchases and purchased $1.5 billion of our common stock in the fourth quarter of 2022 under the 2021 Program. In January 2023, our Board approved a share repurchase program authorizing the purchase of up to $4.5 billion of our common stock through December 31, 2023. The following table presents the activity under our common share repurchase program for each of the months in the quarter ended December 31, 2022.

(Dollars in millions except per share amounts; shares in thousands) Period:	Total Number of shares purchased	Average price per share	Total number of shares purchased as part of publicly announced program	Approximate dollar value of shares that may yet be purchased under publicly announced program[1]
October 1 - October 31, 2022	3,677	$ 72.24	3,677	$ 2,734
November 1 - November 30, 2022	9,537	76.97	9,537	2,000
December 1 - December 31, 2022	6,310	79.22	6,310	—
Total	19,524	$ 76.81	19,524	$ —

[1] The 2021 Program expired on December 31, 2022 with $1.50 billion remaining under the authorization. In January 2023, our Board approved a new share repurchase program authorizing the purchase of up to $4.50 billion of our common stock through December 31, 2023.

Stock purchases under our common stock repurchase programs may be made using various types of transactions, including open-market purchases, accelerated share repurchases or other transactions off the market, and may be made under Rule 10b5-1 trading programs. The timing and amount of any stock purchases and the type of transaction may not be ratable over the duration of the program, may vary from reporting period to reporting period and will depend on several factors, including our capital position and our financial performance, investment opportunities, market conditions, regulatory considerations including the nature and timing of implementation of revisions to the Basel III framework, and the amount of common stock issued as part of employee compensation programs. Our common stock purchase program does not have specific price targets and may be suspended at any time. We may employ third-party broker/dealers to acquire shares on the open market in connection with our common stock purchase programs.

Additional information about our common stock, including Board authorization with respect to purchases by us of our common stock, is provided under "Capital" in “Financial Condition” in our Management's Discussion and Analysis and in Note 15 to the consolidated financial statements in this Form 10-K.

RELATED STOCKHOLDER MATTERS

As a bank holding company, our Parent Company is a legal entity separate and distinct from its principal banking subsidiary, State Street Bank, and its non-banking subsidiaries. The right of the Parent Company to participate as a shareholder in any distribution of assets of State Street Bank upon its liquidation, reorganization or otherwise is subject to the prior claims by creditors of State Street Bank, including obligations for federal funds purchased and securities sold under repurchase agreements and deposit liabilities.

Payment of dividends by State Street Bank is subject to the provisions of the Massachusetts banking law, which provide that State Street Bank's Board of Directors may declare, from State Street Bank's "net profits," as defined below, cash dividends annually, semi-annually or quarterly (but not more frequently) and can declare non-cash dividends at any time. Under Massachusetts banking law, for purposes of determining the amount of cash dividends that are payable by State Street Bank, “net profits” is defined as an amount equal to the remainder of all earnings from current operations plus actual recoveries on loans and investments and other assets, after deducting from the total thereof all current operating expenses, actual losses, accrued dividends on preferred stock, if any, and all federal and state taxes.

No dividends may be declared, credited or paid so long as there is any impairment of State Street Bank's capital stock. The approval of the Massachusetts Commissioner of Banks is required if the total of all dividends declared by State Street Bank in any calendar year would exceed the total of its net profits for that year combined with its retained net profits for the preceding two years, less any required transfer to surplus or to a fund for the retirement of any preferred stock.

Under Federal Reserve regulations, the approval of the Federal Reserve would be required for the payment of dividends by State Street Bank if the total amount of all dividends declared by State Street Bank in any calendar year, including any proposed dividend, would exceed the total of its net income for such calendar year as reported in State Street Bank's *Consolidated Reports of Condition and Income for a Bank with Domestic and Foreign Offices Only - FFIEC 031*, commonly referred to as the “Call Report,” as submitted through the Federal Financial Institutions Examination Council and provided to the Federal Reserve, plus its “retained net income” for the preceding two calendar years. For these purposes, “retained net income,” as of any date of determination, is defined as an amount equal to State Street Bank's net income (as reported in its Call Reports for the calendar year in which retained net income is being determined) less any dividends declared during such year. In determining the amount of dividends that are payable, the total of State Street Bank's net income for the current year and its retained net income for the preceding two calendar years is reduced by any net losses incurred in the current or preceding two-year period and by any required transfers to surplus or to a fund for the retirement of preferred stock.

Prior Federal Reserve approval also must be obtained if a proposed dividend would exceed State Street Bank's “undivided profits” (retained earnings) as reported in its Call Reports. State Street Bank may include in its undivided profits amounts contained in its surplus account, if the amounts reflect transfers of undivided profits made in prior periods and if the Federal Reserve's approval for the transfer back to undivided profits has been obtained.

Under the PCA provisions adopted pursuant to the FDIC Improvement Act of 1991, State Street Bank may not pay a dividend when it is deemed, under the PCA framework, to be under-capitalized, or when the payment of the dividend would cause State Street Bank to be under-capitalized. If State Street Bank is under-capitalized for purposes of the PCA framework, it must cease paying dividends for so long as it is deemed to be under-capitalized. Once earnings have begun to improve and an adequate capital position has been restored, dividend payments may resume in accordance with federal and state statutory limitations and guidelines.

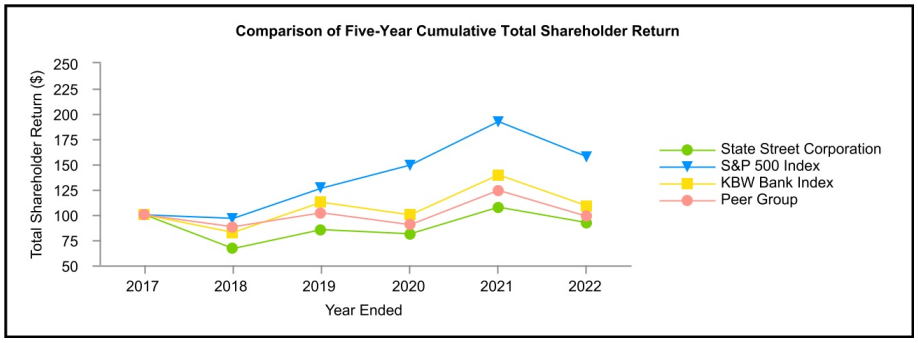
For a discussion of the role of the Federal Reserve and its regulations in connection with the Parent Company’s capital planning and dividend practices, see “Capital Planning, Stress Tests and Dividends” in “Supervision and Regulation” in “Item 1. Business”. Information about dividends declared by our Parent Company and dividends from our subsidiary banks is provided under "Capital" in “Financial Condition” in our Management's Discussion and Analysis, and in Note 15 to the consolidated financial statements in this Form 10-K, and is incorporated herein by reference. Future dividend payments of State Street Bank and our non-banking subsidiaries cannot be determined at this time. In addition, refer to “Capital Planning, Stress Tests and Dividends” in "Supervision and Regulation" in Business in this Form 10-K and the risk factor “Our business and capital-related activities, including our ability to return capital to shareholders and repurchase our capital stock, may be adversely affected by our implementation of regulatory capital and liquidity standards that we must meet or in the event our capital plan or post-stress capital ratios are determined to be insufficient as a result of regulatory capital stress testing” in Risk Factors in this Form 10-K.

Information about our equity compensation plans is in Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters, and in Note 18 to the consolidated financial statements in this Form 10-K, and is incorporated herein by reference.

SHAREHOLDER RETURN PERFORMANCE PRESENTATION

The graph below presents the cumulative total shareholder return on our common stock as compared to the cumulative total return of the S&P 500 Index, the KBW Bank Index and a Peer Group over a five-year period. The cumulative total shareholder return assumes the investment of $100 in our common stock and in each index on December 31, 2017 and reinvestment of common stock dividends.

- The KBW Bank Index is a modified cap-weighted index consisting of 24 exchange-listed stocks, representing national money center banks and leading regional institutions, and is our primary comparator group index.
- The Peer Group is composed of The Bank of New York Mellon Corporation and Northern Trust Corporation.



	2017	2018	2019	2020	2021	2022
State Street Corporation	$ 100	$ 66	$ 85	$ 81	$ 107	**$ 92**
S&P 500 Index	100	96	126	149	192	**157**
KBW Bank Index	100	82	112	100	139	**109**
Peer group	100	88	102	90	124	**98**

The following table compares the cumulative total shareholder return on our common stock to the cumulative total return of the S&P 500 Index, the KBW Bank Index and a Peer Group over a one-year, three-year and five-year period.

	1 year	3 years	5 years
State Street Corporation	(14)%	8 %	(8)%
S&P 500 Index	(18)	25	57
KBW Bank Index	(21)	(2)	9
Peer group	(21)	(4)	(2)

ITEM 6. [RESERVED]

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

GENERAL

This Management's Discussion and Analysis should be read in conjunction with our consolidated financial statements and accompanying notes in this Form 10-K. Certain previously reported amounts presented in this Form 10-K have been reclassified to conform to current-period presentation.

As of December 31, 2022, we had consolidated total assets of $301.45 billion, consolidated total deposits of $235.46 billion, consolidated total shareholders' equity of $25.19 billion and approximately 42,000 employees. Through our two lines of business, Investment Servicing and Investment Management, we operate in more than 100 geographic markets worldwide, including the U.S., Canada, Latin America, Europe, the Middle East and Asia.

For the description of our lines of business, refer to "Lines of Business" in Item 1 in this Form 10-K. For financial and other information about our lines of business, refer to "Line of Business Information" in this Management's Discussion and Analysis and Note 24 to the consolidated financial statements in this Form 10-K.

We prepare our consolidated financial statements in conformity with U.S. GAAP. The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions in its application of certain accounting policies that materially affect the reported amounts of assets, liabilities, equity, revenue and expenses.

Information about the significant accounting policies that require us to make judgments, estimates and assumptions that are difficult, subjective or complex about matters that are uncertain and may change in subsequent periods is included under "Significant Accounting Estimates" in this Management's Discussion and Analysis and in Note 1 to the consolidated financial statements in this Form 10-K.

Certain financial information provided in this Form 10-K, including this Management's Discussion and Analysis, is presented using both a U.S. GAAP, or reported basis, and a non-GAAP basis, including certain non-GAAP measures used in the calculation of identified regulatory ratios. We measure and compare certain financial information on a non-GAAP basis, including information that management uses in evaluating our business and activities. Non-GAAP financial information should be considered in addition to, and not as a substitute for or as superior to, financial information prepared in conformity with U.S. GAAP. Any non-GAAP financial information presented in this Form 10-K, including this Management's Discussion and Analysis, is reconciled to its most directly comparable currently applicable regulatory ratio or U.S. GAAP-basis measure. As part of our non-GAAP-basis measures, we present a fully taxable-equivalent NII that reports non-taxable revenue, such as interest income associated with tax-exempt investment securities, on a fully taxable-equivalent basis, which we believe facilitates an investor's understanding and analysis of our underlying financial performance and trends.

In this Management's Discussion and Analysis, where we describe the effects of changes in foreign currency translation, those effects are determined by applying applicable weighted average FX rates from the relevant 2021 period to the relevant 2022 period results.

This Management's Discussion and Analysis contains statements that are considered "forward-looking statements" within the meaning of U.S. securities laws. These forward-looking statements involve certain risks and uncertainties which could cause actual results to differ materially. Additional information about forward-looking statements and related risks and uncertainties is provided in "Forward-Looking Statements", "Risk Factors Summary" and "Risk Factors" in this Form 10-K.

Information regarding additional disclosures and materials available on our corporate website is provided under "Additional Information" in Item 1 in this Form 10-K.

OVERVIEW OF FINANCIAL RESULTS

TABLE 1: OVERVIEW OF FINANCIAL RESULTS

(Dollars in millions, except per share amounts)	Years Ended December 31, 2022	2021	2020
Total fee revenue	$ 9,606	$ 10,012	$ 9,499
Net interest income	2,544	1,905	2,200
Total other income	(2)	110	4
Total revenue	12,148	12,027	11,703
Provision for credit losses	20	(33)	88
Total expenses	8,801	8,889	8,716
Income before income tax expense	3,327	3,171	2,899
Income tax expense	553	478	479
Net income	$ 2,774	$ 2,693	$ 2,420
Adjustments to net income:			
Dividends on preferred stock[1]	$ (112)	$ (119)	$ (162)
Earnings allocated to participating securities[2]	(2)	(2)	(1)
Net income available to common shareholders	$ 2,660	$ 2,572	$ 2,257
Earnings per common share:			
Basic	$ 7.28	$ 7.30	$ 6.40
Diluted	7.19	7.19	6.32
Average common shares outstanding (in thousands):			
Basic	365,214	352,565	352,865
Diluted	370,109	357,962	357,106
Cash dividends declared per common share	$ 2.40	$ 2.18	$ 2.08
Return on average common equity	11.1 %	10.7 %	10.0 %
Pre-tax margin	27.4	26.4	24.8
Return on average assets	1.0	0.9	0.9
Common dividend payout	33.4	30.3	32.9
Average common equity to average total assets	8.3	8.0	8.3

[1] Additional information about our preferred stock dividends is provided in Note 15 to the consolidated financial statements in this Form 10-K.

[2] Represents the portion of net income available to common equity allocated to participating securities, composed of unvested and fully vested SERP (Supplemental executive retirement plans) shares and fully vested deferred director stock awards, which are equity-based awards that contain non-forfeitable rights to dividends, and are considered to participate with the common stock in undistributed earnings.

The following section provides information related to significant events, as well as highlights of our consolidated financial results for the year ended December 31, 2022 presented in Table 1: Overview of Financial Results. More detailed information about our consolidated financial results, including the comparison of our financial results for the year ended December 31, 2022 to those of the year ended December 31, 2021, is provided under "Consolidated Results of Operations", "Line of Business Information" and "Capital" sections which follow "Financial Results and Highlights", as well as in our consolidated financial statements in this Form 10-K.

The comparison of our financial results for the year ended December 31, 2021 to those of the year ended December 31, 2020 is included in the Management's Discussion and Analysis in our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 17, 2022.

Financial Results and Highlights

- 2022 financial performance:
  - EPS of $7.19, flat compared to 2021.
  - Total revenue increased 1% compared to 2021, as higher NII was partially offset by lower fee revenue and the impact of currency translation, which decreased total revenue by 2% in 2022 relative to the same period in 2021.
  - Total expenses decreased 1% compared to 2021, as continued productivity and optimization savings, as well as the benefit from currency translation were partially offset by ongoing business investments and merit increases, professional fees, recoverable client-related expenses, marketing and travel costs. Currency translation reduced expenses by 3% in 2022 compared to 2021.
  - Return on equity of 11.1% increased from 10.7% in 2021, primarily due to an increase in net income available to common shareholders. Pre-tax margin of 27.4% increased from 26.4% in 2021, primarily due to the increase in total revenue and lower expenses.
  - Positive operating leverage of 2.0% points. Operating leverage represents the difference between the percentage change in total revenue and the percentage change in total expenses, in each case relative to the prior year period.
  - Negative fee operating leverage of 3.1% points. Fee operating leverage represents the difference between the percentage change in total fee revenue and the percentage change in total expenses, in each case relative to the prior year period.
  - Returned approximately $2.4 billion to our shareholders in the form of common stock dividends and common share repurchases compared to approximately $1.7 billion in 2021.

Revenue

- Total fee revenue decreased 4% compared to 2021, primarily driven by lower servicing fees, management fees, and other fee revenue, partially offset by higher foreign exchange trading services revenue and software and processing fees. Currency translation negatively impacted both total revenue and total fee revenue by 2% each in 2022 compared to 2021.
- Servicing fee revenue decreased 8% compared to 2021, primarily due to normal pricing headwinds, lower average market levels and lower client activity and adjustments, partially offset by net new business. Currency translation contributed 3% to the decrease in servicing fee revenue in 2022 compared to 2021.
- Management fee revenue decreased 6% compared to 2021, primarily due to lower average equity and fixed income market levels, a previously reported client-specific pricing adjustment and institutional net outflows, partially offset by the absence of the impact of money market fee waivers and net inflows from cash and ETFs. Currency translation contributed 2% to the decrease in management fee revenue in 2022 compared to 2021.
- Foreign exchange trading services revenue increased 14% compared to 2021, primarily reflecting higher FX spreads and a revenue- related recovery from a 2018 FX benchmark litigation resolution, partially offset by lower client FX volumes.
- Securities finance revenue was flat compared to 2021, reflecting higher spreads, offset by lower agency and enhanced custody balances.
- Software and processing fees revenue increased 7% compared to 2021, primarily due to higher front office software and data revenue associated with CRD, partially offset by lower lending fees.
- Other fee revenue decreased $64 million compared to 2021, primarily driven by negative market-related adjustments.
- NII increased 34% compared to 2021, primarily due to higher interest rates from U.S. and international central bank rate hikes, partially offset by lower client deposits.

Provision for Credit Losses

- We recorded a $20 million provision for credit losses, due to a downward shift in management's economic outlook that was partially offset by a reduction in overall loan portfolio risk, compared to a $33 million release of credit reserves in 2021.

Expenses

- Total expenses decreased 1% compared to 2021, as continued productivity and optimization savings, as well as the benefit from currency translation were partially offset by ongoing business investments and merit increases, professional fees, recoverable client-related expenses, marketing and travel costs. Currency translation reduced expenses by 3% in 2022 compared to 2021.

Notable Items

- The impact of notable items in 2022 includes:
  - Revenue-related recovery of $23 million from settlement proceeds associated with the 2018 FX benchmark litigation resolution, which is reflected in foreign exchange trading services revenue;
  - Repositioning charges of approximately $78 million, consisting of $50 million of compensation and benefits expenses primarily related to streamlining the Investment Services organization, and $20 million of occupancy charges related to real estate footprint optimization and $8 million of BBH-related repositioning charges; and
  - Acquisition and restructuring costs of approximately $65 million related to the BBH Investor Services acquisition transaction we are no longer pursuing.
- The impact of notable items in 2021 includes:
  - Gain on the sale of a majority share of our Wealth Management Services (WMS) business of $53 million recorded in other income;
  - Gain on sale of investment securities of $58 million related to a one-time transfer of LIBOR and Euro Interbank Offered Rate based securities from HTM to AFS, and the subsequent sale of the majority of those securities in 2021;
  - Net repositioning release of approximately $3 million, consisting of $32 million release of previously accrued severance charges, partially offset by $29 million of occupancy charges related to footprint optimization;

- Deferred compensation expense acceleration of approximately $147 million associated with an amendment of certain outstanding deferred cash incentive compensation awards;
- Acquisition and restructuring costs of approximately $65 million, of which $53 million related to CRD and $13 million related to the BBH Investor Services acquisition transaction we are no longer pursuing;
- Net legal and other expenses of approximately $18 million, including $20 million in information systems and communications, $8 million in transaction processing services and $1 million in other expenses, partially offset by a legal accrual release of approximately $11 million associated with a settlement related to the invoicing matter; and
- Costs of $5 million due to the partial redemption of outstanding Series F non-cumulative perpetual preferred stock representing the difference between the redemption value and the net carrying value of the preferred stock.

AUC/A and AUM

- AUC/A of $36.74 trillion as of December 31, 2022 decreased 16% compared to December 31, 2021, primarily due to lower market levels, a previously disclosed client transition and the impact of currency translation, partially offset by new business installations. In 2022, newly announced asset servicing mandates totaled approximately $1.9 trillion. Servicing assets remaining to be installed in future periods totaled approximately $3.60 trillion as of December 31, 2022.
- AUM of $3.48 trillion as of December 31, 2022 decreased 16% compared to December 31, 2021, primarily due to lower market levels, institutional net outflows and the impact of currency translation, partially offset by net inflows from ETFs.

Capital

- In 2022, we returned approximately $2.4 billion to our shareholders in the form of common stock dividends and common share repurchases compared to approximately $1.7 billion in 2021.
- We declared aggregate common stock dividends of $2.40 per share, totaling $871 million compared to $2.18 per share, totaling $779 million in 2021.
- We did not repurchase any common stock during the first three quarters of 2022. In October 2022, we resumed our share repurchases under the 2021 Program, and purchased an aggregate of 19.5 million shares of common stock, at an average per share cost of $76.81 and an aggregate cost of approximately $1.5 billion in the fourth quarter of 2022.
- In January 2023, our Board approved a share repurchase program authorizing the purchase of up to $4.5 billion of our common stock through December 31, 2023.
- Our standardized CET1 capital ratio decreased to 13.6% as of December 31, 2022, compared to 14.3% as of December 31, 2021, primarily reflecting lower AOCI related to AFS securities, largely recognized in the first half of 2022 driven by the significant increase in interest rates across the yield curve and the resumption of common share repurchases in the fourth quarter of 2022, partially offset by higher retained earnings and episodically lower RWA. However, we anticipate RWA to increase over the coming quarter as market volatility levels normalize and we efficiently deploy capital to our businesses. Our Tier 1 leverage ratio decreased to 6.0% as of December 31, 2022 compared to 6.1% as of December 31, 2021, primarily driven by lower AOCI and resumption of share repurchases in the fourth quarter of 2022, partially offset by a decline in consolidated average assets. During 2022, we completed a number of actions designed to mitigate additional AOCI risk in the current environment including a $23.56 billion transfer of securities from AFS to HTM. Given the current global economic environment, we currently expect our CET1 and Tier 1 leverage capital ratios to move into our target ranges of 10-11% and 5.25-5.75%, respectively.

Debt Issuances and Redemptions

- On February 7, 2022, we issued $300 million aggregate principal amount of 1.746% fixed-to-floating rate senior notes due 2026, $650 million aggregate principal amount of 2.203% fixed-to-floating rate senior notes due 2028 and $550 million aggregate principal amount of 2.623% fixed-to-floating rate senior notes due 2033.
- On March 30, 2022, we redeemed $750 million aggregate principal amount of 2.825% Fixed-to-Floating Rate Senior Notes due 2023.
- On May 13, 2022, we issued $500 million aggregate principal amount of 4.421% fixed-to-floating rate senior notes due 2033.
- On May 15, 2022, we redeemed $750 million aggregate principal amount of 2.653% fixed-to-floating rate senior notes due 2023.
- On August 4, 2022, we issued $750 million aggregate principal amount of 4.164% fixed-to-floating rate senior notes due 2033.
- On November 4, 2022, we issued $500 million aggregate principal amount of 5.751% fixed-to-floating rate senior notes due 2026 and $500 million aggregate principal amount of 5.820% fixed-to-floating rate senior notes due 2028.
- On January 26, 2023, we issued $500 million aggregate principal amount of 4.857% fixed-to-floating rate senior notes due 2026 and $750 million aggregate principal amount of 4.821% fixed-to-floating rate senior notes due 2034.

CONSOLIDATED RESULTS OF OPERATIONS

This section discusses our consolidated results of operations for 2022 compared to 2021 and should be read in conjunction with the consolidated financial statements and accompanying notes to the consolidated financial statements in this Form 10-K.

Total Revenue

TABLE 2: TOTAL REVENUE

	Years Ended December 31,				
(Dollars in millions)	**2022**	**2021**	**2020**	**% Change 2022 vs. 2021**	**% Change 2021 vs. 2020**
Fee revenue:					
Back office services	**$ 4,714**	$ 5,117	$ 4,758	(8)%	8 %
Middle office services	**373**	414	399	(10)	4
Servicing fees[1]	**5,087**	5,531	5,157	(8)	7
Management fees	**1,939**	2,053	1,880	(6)	9
Foreign exchange trading services	**1,376**	1,211	1,363	14	(11)
Securities finance	**416**	416	356	—	17
Front office software and data	**550**	484	446	14	9
Lending related and other fees	**239**	254	239	(6)	6
Software and processing fees[1]	**789**	738	685	7	8
Other fee revenue[1]	**(1)**	63	58	nm	9
Total fee revenue	**9,606**	10,012	9,499	(4)	5
Net interest income:					
Interest income	**4,088**	1,908	2,575	nm	(26)
Interest expense	**1,544**	3	375	nm	(99)
Net interest income	**2,544**	1,905	2,200	34	(13)
Other income:					
Gains (losses) related to investment securities, net	**(2)**	57	4	nm	nm
Other income	**—**	53	—	nm	nm
Total other income	**(2)**	110	4	nm	nm
Total revenue	**$ 12,148**	$ 12,027	$ 11,703	1	3

[1] In the first quarter of 2022, we reclassified certain fee revenue in our Consolidated Statement of Operations, primarily moving revenues that are not directly associated with software and processing fees to a new Other fee revenue line item. In addition, we provided a disaggregation of servicing fees into Back office services and Middle office services and of software and processing fees into Front office software and data and Lending related and other fees. Prior periods have been revised to reflect these changes.

nm Not meaningful

Fee Revenue

Table 2: Total Revenue, provides the breakout of fee revenue for the years ended December 31, 2022, 2021 and 2020. Servicing and management fees collectively made up approximately 73%, 76% and 74% of the total fee revenue in 2022, 2021 and 2020, respectively.

Servicing Fee Revenue

Servicing fees, as presented in Table 2: Total Revenue, decreased 8% in 2022 compared to 2021 primarily due to normal pricing headwinds, lower average market levels and lower client activity and adjustments, partially offset by net new business. Currency translation decreased servicing fee revenue by 3% in 2022 relative to 2021.

Servicing fees generated outside the U.S. were approximately 46% of total servicing fees in 2022, compared to approximately 48% in 2021.

Servicing fee revenue comprises revenue from both back office and middle office services. Generally, our servicing fee revenues are affected by several factors including changes in market valuations, client activity and asset flows, net new business and the manner in which we price our services. We provide a range of services to our clients, including core custody services, accounting, reporting and administration, which we refer to collectively as back office services and middle office services. The nature and mix of services provided and the asset classes for which the services are performed affect our servicing fees. The basis for fees will differ across regions and clients.

Changes in Market Valuations

Our servicing fee revenue is impacted by both our levels and the geographic and product mix of our AUC/A. Increases or decreases in market valuations have a corresponding impact on the level of our AUC/A and servicing fee revenues, though the degree of impact will vary depending on asset types and classes and geography of assets held within our clients' portfolios. For certain asset classes where the valuation process is more complex, including alternative investments, or where our valuation is dependent on third party information, AUC/A is reported on a time lag, typically one-month. For those asset classes, the impact of market levels on our reported AUC/A does not reflect current period-end market levels.

We estimate that worldwide market valuations impacted our servicing fee revenues by approximately (2)% and 7% in 2022 and 2021, respectively. Over the five years ended December 31, 2022, we estimate this impact was 2% on average with a range of (2)% to 7% annually. See Table 3: Daily Averages, Month-End Averages and Year-End Equity Indices for selected indices. While the specific indices presented are indicative of general market trends, the asset types and classes relevant to individual client portfolios can and do differ, and the performance of associated relevant indices and of client portfolios can therefore differ from the performance of the indices presented. In addition, our asset classifications may differ from those industry classifications presented.

Assuming that all other factors remain constant, including client activity, asset flows and pricing, we estimate, using relevant information as of December 31, 2022, that a 10% increase or decrease in worldwide equity valuations, on a weighted average basis, over the relevant periods for which our servicing fees are calculated, would result in a corresponding change in our total servicing fee revenues, on average and over multiple quarters, of approximately 3%. We estimate, similarly assuming all other factors remain constant and using relevant information as of December 31, 2022, that changes in worldwide fixed income markets, which on a weighted average basis and over time are typically less volatile than worldwide equity markets, have a significantly smaller impact on our servicing fee revenues on average and over time.

TABLE 3: DAILY AVERAGES, MONTH-END AVERAGES AND YEAR-END EQUITY INDICES[1]

	Daily Averages of Indices			Month-End Averages of Indices			Year-End Indices		
	Years Ended December 31,			Years Ended December 31,			Years Ended December 31,		
	2022	2021	% Change	2022	2021	% Change	2022	2021	% Change
S&P 500®	**4,099**	4,273	(4)%	**4,078**	4,279	(5)%	**3,840**	4,766	(19)%
MSCI EAFE®	**1,976**	2,289	(14)	**1,965**	2,272	(14)	**1,944**	2,336	(17)
MSCI® Emerging Markets	**1,033**	1,315	(21)	**1,026**	1,303	(21)	**956**	1,232	(22)

[1] The index names listed in the table are service marks of their respective owners.

TABLE 4: YEAR-END DEBT INDICES[1]

	As of December 31,		
	2022	2021	% Change
Bloomberg U.S. Aggregate Bond Index®	**2,049**	2,355	(13)%
Bloomberg Global Aggregate Bond Index®	**446**	532	(16)

[1] The index names listed in the table are service marks of their respective owners.

Client Activity and Asset Flows

Client activity and asset flows are impacted by the number of transactions we execute on behalf of our clients, including FX settlements, equity and derivative trades, and wire transfer activity, as well as actions by our clients to change the asset class in which their assets are invested. Our servicing fee revenues are impacted by a number of factors, including transaction volumes, asset levels and asset classes in which funds are invested, as well as industry trends associated with these client-related activities.

Our clients may change the asset classes in which their assets are invested, based on their market outlook, risk acceptance tolerance or other considerations. We estimate that client activity and asset flows, together, impacted our servicing fee revenues by approximately (2)% and 0% in 2022 and 2021, respectively. Over the five years ended December 31, 2022, we estimate this impact was 0% on average with a range of (2)% to 2% annually. See Table 5: Industry Asset Flows for selected asset flow information. While the asset flows presented are indicative of general market trends, the asset types and classes relevant to individual client portfolios can and do differ, and our flows may differ from those market trends. In addition, our asset classifications may differ from those industry classifications presented.

TABLE 5: INDUSTRY ASSET FLOWS

	Years Ended December 31,	
(In billions)	**2022**	**2021**
North America - (US Domiciled) - Morningstar Direct Market Data[1][2][3]		
Long-Term Funds[4]	**$ (890.9)**	$ 612.4
Money Market	**(35.3)**	405.4
Exchange-Traded Fund	**572.5**	504.6
Total Flows	**$ (353.7)**	$ 1,522.4
Europe - Morningstar Direct Market Data[1][2][5]		
Long-Term Funds[4]	**$ (254.1)**	$ 809.4
Money Market	**63.7**	4.5
Exchange-Traded Fund	**67.0**	176.8
Total Flows	**$ (123.4)**	$ 990.7

[1] Industry data is provided for illustrative purposes only. It is not intended to reflect our activity or our clients' activity and is indicative of only segments of the entire industry.

[2] Source: Morningstar. The data includes long-term mutual funds, ETFs and money market funds. Mutual fund data represents estimates of net new cash flow, which is new sales minus redemptions combined with net exchanges, while ETF data represents net issuance, which is gross issuance less gross redemptions. Data for Fund of Funds, Feeder funds and Obsolete funds were excluded from the series to prevent double counting. Data is from the Morningstar Direct Asset Flows database.

[3] The year ended December 31, 2022 data for North America (US domiciled) includes Morningstar direct actuals for January 2022 through November 2022 and Morningstar direct estimates for December 2022.

[4] The long-term fund flows reported by Morningstar direct in North America are composed of US domiciled market flows mainly in Equities, Allocation and Fixed-Income asset classes. The long-term fund flows reported by Morningstar direct in EMEA are composed of the European market flows mainly in Equities, Allocation and Fixed-Income asset classes.

[5] The year ended December 31, 2022 data for Europe is on a rolling twelve month basis for December 2021 through November 2022, sourced by Morningstar.

Net New Business

Net new business, which includes business both won and lost, has affected our servicing fee revenues by approximately 1% in both 2022 and 2021. Over the five years ended December 31, 2022, this impact was 0% on average with a range of 0% to 1% annually. Gross investment servicing mandates were $1.94 trillion in 2022 and $2.00 trillion per year on average over the past five years. Over the five years ended December 31, 2022, gross annual investment servicing mandates ranged from approximately $0.79 trillion to $3.52 trillion.

Servicing fee revenue associated with new servicing mandates may vary based on the breadth of services provided, the time required to install the assets, and the types of assets installed.

Revenues associated with new mandates are not reflected in our servicing fee revenue until the assets have been installed. Our installation timeline, in general, can range from 6 to 36 months, with the average installation timeline being approximately 9 to 12 months over the past 2 years. Our more complex installations, including new State Street Alpha mandates, will generally be on the longer end of that range. With respect to the current asset mandates of approximately $3.61 trillion that are yet to be installed as of December 31, 2022, we expect the conversion will occur over the coming 36 months.

Pricing

The industry in which we operate has historically faced pricing pressure, and our servicing fee revenues are also affected by such pressures today. Consequently, no assumption should be drawn as to future revenue run rate from announced servicing wins, as the amount of revenue associated with AUC/A, once installed, can vary materially. We estimate that pricing pressure with respect to existing clients has impacted our servicing fees by approximately (2)% in both 2022 and 2021. On average, over the five years ended December 31, 2022, this impact

was approximately (3)% annually, with the impact ranging from (2)% to (4)% in any given year. Pricing concessions can be a part of a contract renegotiation with a client including terms that may benefit us, such as extending the term of our relationship with the client, expanding the scope of services that we provide or reducing our dependency on manual processes through the standardization of the services we provide. The timing of the impact of additional revenue generated by anticipated additional services, and the amount of revenue generated, may differ from expectations due to the impact of pricing concessions on existing services due to the necessary time required to onboard those new services, the nature of those services and client investment practices and other factors. These same market pressures also impact the fees we negotiate when we win business from new clients.

In order to offset the typical client attrition and normal pricing headwinds, we estimate that we need at least $1.5 trillion of new AUC/A per year; although, notwithstanding increases in AUC/A, servicing fees remain subject to several factors, including changes in market valuations, client activity and asset flows, the manner in which we price our services, the nature of the assets being serviced and the type of services and the other factors described in this Form 10-K.

Historically, and based on an indicative sample of revenue, we estimate that approximately 60%, on average, of our servicing fee revenues have been variable due to changes in asset valuations including changes in daily average valuations of AUC/A; another 15%, on average, of our servicing fees are impacted by the volume of activity in the funds we serve; and the remaining approximately 25% of our servicing fees tend not to be variable in nature nor impacted by market fluctuations or values.

Based on the impact of the above, client activity and asset flows, net new business and pricing, noted drivers of our servicing fee revenue will vary depending on the mix of products and services we provide to our clients. The full impact of changes in market valuations and the volume of activity in the funds may not be fully reflected in our servicing fee revenues in the periods in which the changes occur, particularly in periods of higher volatility.

TABLE 6: ASSETS UNDER CUSTODY AND/OR ADMINISTRATION BY PRODUCT[1][2]

(In billions)	December 31, 2022	December 31, 2021	December 31, 2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020
Collective funds, including ETFs	$ 12,261	$ 15,722	$ 13,387	(22)%	17 %
Mutual funds	9,610	11,575	9,810	(17)	18
Pension products	7,734	8,443	7,594	(8)	11
Insurance and other products	7,138	7,938	8,000	(10)	(1)
Total	$ 36,743	$ 43,678	$ 38,791	(16)	13

TABLE 7: ASSETS UNDER CUSTODY AND/OR ADMINISTRATION BY ASSET CLASS[2]

(In billions)	December 31, 2022	December 31, 2021	December 31, 2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020
Equities	$ 20,575	$ 25,974	$ 21,626	(21)%	20 %
Fixed-income	10,318	12,587	12,834	(18)	(2)
Short-term and other investments	5,850	5,117	4,331	14	18
Total	$ 36,743	$ 43,678	$ 38,791	(16)	13

TABLE 8: ASSETS UNDER CUSTODY AND/OR ADMINISTRATION BY GEOGRAPHY[2][3]

(In billions)	December 31, 2022	December 31, 2021	December 31, 2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020
Americas	$ 26,981	$ 32,427	$ 28,245	(17)%	15 %
Europe/Middle East/Africa	7,136	8,599	8,101	(17)	6
Asia/Pacific	2,626	2,652	2,445	(1)	8
Total	$ 36,743	$ 43,678	$ 38,791	(16)	13

[1] Certain previously reported amounts presented have been reclassified to conform to current-period presentation.

[2] Consistent with past practice, AUC/A values for certain asset classes are based on a lag, typically one-month.

[3] Geographic mix is generally based on the domicile of the entity servicing the funds and is not necessarily representative of the underlying asset mix.

Asset servicing mandates newly announced in 2022 totaled approximately $1.94 trillion. Servicing assets remaining to be installed in future periods totaled approximately $3.61 trillion as of December 31, 2022, which will be reflected in AUC/A in future periods after installation and will generate servicing fee revenue in subsequent periods. The full revenue impact of such mandates will be realized as the assets are installed and additional services are added over that period.

New asset servicing mandates may be subject to completion of definitive agreements, approval of applicable boards and shareholders and customary regulatory approvals. New asset servicing mandates and servicing assets remaining to be installed in future periods exclude certain new business which has been contracted, but for which the client has not yet provided permission to publicly disclose and the expected installation date extends beyond one quarter. These excluded assets, which from time to time may be significant, will be included in new asset

servicing mandates and reflected in servicing assets remaining to be installed in the period in which the client provides its permission. Servicing mandates and servicing assets remaining to be installed in future periods are presented on a gross basis and therefore also do not include the impact of clients who have notified us during the period of their intent to terminate or reduce their relationship with us, which may from time to time be significant.

With respect to these new servicing mandates, once installed we may provide various services, including back office services such as custody and safekeeping, transaction processing and trade settlement, fund administration, reporting and record keeping, security servicing, fund accounting, middle office services such as investment book of records (IBOR), transaction management, loans, cash derivatives and collateral services, recordkeeping, client reporting and investment analytics, markets services such as FX trading services, liquidity solutions, currency and collateral management and securities finance, and front office services such as portfolio management solutions, risk analytics, scenario analysis, performance and attribution, trade order and execution management, pre-trade compliance and ESG investment tools. Revenues associated with new servicing mandates may vary based on the breadth of services provided, the timing of installation, and the types of assets.

As previously disclosed, in early 2021, due to a decision to diversify providers, one of our large asset servicing clients has advised us it expects to move a significant portion of its ETF assets currently with State Street to one or more other providers, pending necessary approvals. We expect to continue as a significant service provider for this client after this transition and for the client to continue to be meaningful to our business. The transition began in 2022, but will principally occur in 2023 and 2024 and will impact our fee revenue and income growth trends through 2025. For the year ended December 31, 2022, the fee revenue associated with the assets yet to transition represented approximately 1.7% of our total fee revenue. The actual total revenue and income impact of this transition will reflect a range of factors, including potential growth in our continuing business with the client and expense reductions associated with the transition.

Management Fee Revenue

Management fees decreased 6% in 2022 compared to 2021, primarily due to lower average equity and fixed income market levels, a previously reported client-specific pricing adjustment and institutional net outflows, partially offset by the absence of the impact of money market fee waivers and net inflows from cash and ETFs.

Management fees generated outside the U.S. were approximately 26% of total management fees in both 2022 and 2021.

Management fees generally are affected by our level of AUM, which we report based on month-end valuations. Management fees for certain components of managed assets, such as ETFs, mutual funds and UCITS, are affected by daily average valuations of AUM. Management fee revenue is more sensitive to market valuations than servicing fee revenue, as a higher proportion of the underlying services provided, and the associated management fees earned, are dependent on equity and fixed-income security valuations. Additional factors, such as the relative mix of assets managed, may have a significant effect on our management fee revenue. While certain management fees are directly determined by the values of AUM and the investment strategies employed, management fees may reflect other factors, including performance fee arrangements, as well as our relationship pricing for clients. From the second half of 2020 through the first quarter of 2022, we were in a prolonged low-interest rate environment, and waived certain fees for our clients for money market products. Following the Federal Reserve rate hikes in March and September 2022, money market fee waivers did not have a significant impact on our management fee revenue in the last three quarters of 2022.

Asset-based management fees for passively managed products, to which our AUM is currently primarily weighted, are generally charged at a lower fee on AUM than for actively managed products. Actively managed products may also include performance fee arrangements which are recorded when the fee is earned, based on predetermined benchmarks associated with the applicable account's performance.

In light of the above, we estimate, using relevant information as of December 31, 2022 and assuming that all other factors remain constant, including the impact of business won and lost and client flows, that:

- A 10% increase or decrease in worldwide equity valuations, on a weighted average basis, over the relevant periods for which our management fees are calculated, would result in a corresponding change in our total management fee revenues, on average and over multiple quarters, of approximately 5%; and
- changes in worldwide fixed income markets, which on a weighted average basis and over time are typically less volatile than worldwide equity markets, will have a significantly smaller impact on our management fee revenues on average and over time.

Daily averages, month-end averages and year-end indices demonstrate worldwide changes in equity and debt markets that affect our management fee revenue. Year-end indices affect the values of AUM as of those dates. See Table 3: Daily Averages, Month-End Averages and Year-End Equity Indices for selected indices. While the specific indices presented are indicative of general market trends, the asset types and classes relevant to individual client portfolios can and do differ, and the performance of associated relevant indices and of client portfolios can therefore differ from the performance of the indices presented. In addition, our asset classifications may differ from those industry classifications presented.

TABLE 9: ASSETS UNDER MANAGEMENT BY ASSET CLASS AND INVESTMENT APPROACH

(In billions)	December 31, 2022	December 31, 2021	December 31, 2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020
Equity:					
Active	$ 54	$ 80	$ 85	(33)%	(6)%
Passive	2,074	2,594	2,086	(20)	24
Total equity[1]	2,128	2,674	2,171	(20)	23
Fixed-income:					
Active	83	103	90	(19)	14
Passive	471	520	459	(9)	13
Total fixed-income[1]	554	623	549	(11)	13
Cash[1][2]	376	368	349	2	5
Multi-asset-class solutions:					
Active	28	34	40	(18)	(15)
Passive	181	188	146	(4)	29
Total multi-asset-class solutions[1]	209	222	186	(6)	19
Alternative investments[3]:					
Active	35	56	39	(38)	44
Passive	179	195	173	(8)	13
Total alternative investments[1]	214	251	212	(15)	18
Total	$ 3,481	$ 4,138	$ 3,467	(16)	19

[1] The implementation of an improved internal data management system for product level data in the first quarter of 2021 resulted in some AUM reclassifications between the categories presented for prior periods to align with the current presentation. There was no impact to the total level of reported AUM.

[2] Includes both floating- and constant-net-asset-value portfolios held in commingled structures or separate accounts.

[3] Includes real estate investment trusts, currency and commodities, including SPDR® Gold Shares and SPDR® Gold MiniSharesSM Trust. We are not the investment manager for the SPDR® Gold Shares and SPDR®Gold MiniSharesSM Trust, but act as the marketing agent.

TABLE 10: GEOGRAPHIC MIX OF ASSETS UNDER MANAGEMENT[1]

(In billions)	December 31, 2022	December 31, 2021	December 31, 2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020
North America	$ 2,544	$ 2,931	$ 2,411	(13)%	22 %
Europe/Middle East/Africa	511	592	512	(14)	16
Asia/Pacific	426	615	544	(31)	13
Total	$ 3,481	$ 4,138	$ 3,467	(16)	19

[1] Geographic mix is based on client location or fund management location.

TABLE 11: EXCHANGE - TRADED FUNDS BY ASSET CLASS[1]

(In billions)	December 31, 2022	December 31, 2021	December 31, 2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020
Alternative Investments[2]	$ 67	$ 72	$ 83	(7)%	(13)%
Equity[3]	817	970	708	(16)	37
Multi Asset	1	1	—	—	nm
Fixed-Income[3]	134	135	115	(1)	17
Total Exchange-Traded Funds	$ 1,019	$ 1,178	$ 906	(13)	30

[1] ETFs are a component of AUM presented in the preceding table.

[2] Includes real estate investment trusts, currency and commodities, including SPDR® Gold Shares and SPDR® Gold MiniSharesSM Trust. We are not the investment manager for the SPDR® Gold Shares and SPDR®Gold MiniSharesSM Trust, but act as the marketing agent.

[3] The implementation of an improved internal data management system for product level data in the first quarter of 2021 resulted in some AUM reclassifications between the categories presented for prior periods to align with the current presentation. There was no impact to the total level of reported AUM.

nm Not meaningful

TABLE 12: ACTIVITY IN ASSETS UNDER MANAGEMENT BY PRODUCT CATEGORY

(In billions)	Equity[1]	Fixed-Income[1]	Cash[1][2]	Multi-Asset-Class Solutions[1]	Alternative Investments[1][3]	Total
Balance as of December 31, 2019	$ 1,990	$ 479	$ 317	$ 157	$ 173	$ 3,116
Long-term institutional flows, net[4]	(101)	4	(1)	9	(11)	(100)
Exchange-traded fund flows, net	12	16	—	—	16	44
Cash fund flows, net	—	—	32	—	—	32
Total flows, net	(89)	20	31	9	5	(24)
Market appreciation (depreciation)	241	42	(1)	18	30	330
Foreign exchange impact	29	8	2	2	4	45
Total market/foreign exchange impact	270	50	1	20	34	375
Balance as of December 31, 2020	$ 2,171	$ 549	$ 349	$ 186	$ 212	$ 3,467
Long-term institutional flows, net[4]	(25)	70	(2)	16	10	69
Exchange-traded fund flows, net	94	23	—	—	(10)	107
Cash fund flows, net	—	—	20	—	—	20
Total flows, net	69	93	18	16	—	196
Market appreciation (depreciation)	476	(7)	2	22	43	536
Foreign exchange impact	(42)	(12)	(1)	(2)	(4)	(61)
Total market/foreign exchange impact	434	(19)	1	20	39	475
Balance as of December 31, 2021	$ 2,674	$ 623	$ 368	$ 222	$ 251	$ 4,138
Long-term institutional flows, net[4]	**(97)**	**18**	**1**	**19**	**—**	**(59)**
Exchange-traded fund flows, net	**—**	**22**	**—**	**—**	**—**	**22**
Total flows, net	**(97)**	**40**	**1**	**19**	**—**	**(37)**
Market appreciation (depreciation)	**(398)**	**(94)**	**9**	**(28)**	**(30)**	**(541)**
Foreign exchange impact	**(51)**	**(15)**	**(2)**	**(4)**	**(7)**	**(79)**
Total market/foreign exchange impact	**(449)**	**(109)**	**7**	**(32)**	**(37)**	**(620)**
Balance as of December 31, 2022	**$ 2,128**	**$ 554**	**$ 376**	**$ 209**	**$ 214**	**$ 3,481**

[1] The implementation of an improved internal data management system for product level data in the first quarter of 2021 resulted in some AUM reclassifications between the categories presented for prior periods to align with the current presentation. There was no impact to the total level of reported AUM.
[2] Includes both floating- and constant-net-asset-value portfolios held in commingled structures or separate accounts.
[3] Includes real estate investment trusts, currency and commodities, including SPDR® Gold Shares and SPDR® Gold MiniSharesSM Trust. We are not the investment manager for the SPDR® Gold Shares and SPDR®Gold MiniSharesSM Trust, but act as the marketing agent.
[4] Amounts represent long-term portfolios, excluding ETFs.

Foreign Exchange Trading Services

Foreign exchange trading services revenue, as presented in Table 2: Total Revenue, increased 14% in 2022 compared to 2021, primarily reflecting higher FX spreads and a revenue- related recovery from a 2018 FX benchmark litigation resolution, partially offset by lower client FX volumes. The negative impact on foreign exchange trading services revenue for fee waivers to money market funds participating on the Fund Connect platform, including State Street Global Advisors funds, was $12 million in 2022, compared to $53 million in 2021. The lower impact in 2022 was driven by the higher interest rate environment.

Foreign exchange trading services revenue comprises revenue generated by FX trading and revenue generated by brokerage and other trading services, which made up 68% and 32%, respectively, of foreign exchange trading services revenue in 2022, and 67% and 33%, respectively in 2021.

We primarily earn FX trading revenue by acting as a principal market-maker through both "direct sales and trading" and "indirect FX trading."

- Direct sales and trading: Represent FX transactions at negotiated rates with clients and investment managers that contact our trading desk directly. These principal market-making activities include transactions for funds serviced by third party custodians or prime brokers, as well as those funds under custody with us.
- Indirect FX trading: Represents FX transactions with clients, for which we are the funds' custodian, or their investment managers, routed to our FX desk through our asset-servicing operation. We execute indirect FX trades as a principal at rates disclosed to our clients.

Our FX trading revenue is influenced by multiple factors, including: the volume and type of client FX transactions and related spreads; currency volatility, reflecting market conditions; and our management of exchange rate, interest rate and other market risks associated with our FX activities. The relative impact of these factors on our total FX trading revenues often differs from period to period. For example, assuming all other factors remain constant, increases or decreases in volumes or bid-offer spreads across product mix tend to result in increases or decreases, as the case may be, in client-related FX revenue.

Our clients that utilize indirect FX trading can, in addition to executing their FX transactions through dealers not affiliated with us, transition from indirect FX trading to either direct sales and trading execution, including our "Street FX" service, or to one of our electronic trading platforms. Street FX, in which we continue to act as a principal

market-maker, enables our clients to define their FX execution strategy and automate the FX trade execution process, both for funds under custody with us as well as those under custody at another bank.

We also earn foreign exchange trading services revenue through "electronic FX services" and "other trading, transition management and brokerage revenue."

- Electronic FX services: Our clients may choose to execute FX transactions through one of our electronic trading platforms. These transactions generate revenue through a "click" fee.
- Other trading, transition management and brokerage revenue: As our clients look to us to enhance and preserve portfolio values, they may choose to utilize our Transition or Currency Management capabilities or transact with our Equity Trade execution group. These transactions, which are not limited to foreign exchange, generate revenue via commissions charged for trades transacted during the management of these portfolios.

Fund Connect is another one of our electronic trading platforms: it is a global trading, analytics and cash management tool with access to more than 400 money market funds from leading providers.

Securities Finance

Securities finance revenue, as presented in Table 2: Total Revenue, was flat in 2022 compared to 2021, primarily driven by higher spreads, offset by lower agency and enhanced custody balances.

Our securities finance business consists of three components:

(1) an agency lending program for State Street Global Advisors managed investment funds with a broad range of investment objectives, which we refer to as the State Street Global Advisors lending funds;

(2) an agency lending program for third-party investment managers and asset owners, which we refer to as the agency lending funds; and

(3) security lending transactions which we enter into as principal, which we refer to as our enhanced custody business.

Securities finance revenue earned from our agency lending activities, which is composed of our split of both the spreads related to cash collateral and the fees related to non-cash collateral, is principally a function of the volume of securities on loan, the interest rate spreads and fees earned on the underlying collateral and our share of the fee split.

As principal, our enhanced custody business borrows securities from the lending client or other market participants and then lends such securities to the subsequent borrower, either our client or a broker/dealer. We act as principal when the lending client is unable to, or elects not to, transact directly with the market and execute the transaction and furnish the securities. In our role as principal, we provide support to the transaction through our credit rating. While we source a significant proportion of the securities furnished by us in our role as principal from third parties, we have the ability to source securities through assets under custody from clients who have designated us as an eligible borrower.

Market influences may continue to affect client demand for securities finance, and as a result our revenue from, and the profitability of, our securities lending activities in future periods. In addition, the constantly evolving regulatory environment, including revised or proposed capital and liquidity standards, interpretations of those standards, and our own balance sheet management activities, may influence modifications to the way in which we deliver our agency lending or enhanced custody businesses, the volume of our securities lending activity and related revenue and profitability in future periods.

Software and Processing Fees

Software and processing fees revenue, presented in Table 2: Total Revenue, increased 7% in 2022 compared to 2021, primarily driven by higher front office software and data revenue associated with CRD, partially offset by lower lending fees.

Software and processing fees revenue includes diverse types of fees and revenue, including fees from software licensing and maintenance and fees from our structured products business.

Front office software and data revenue, which primarily includes revenue from CRD, Alpha Data Platform and Alpha Data Services, increased 14% in 2022 compared to 2021, primarily driven by higher on-premises renewals and software-enabled revenue.

Revenue related to the front office solutions provided by CRD is primarily driven by the sale of term software licenses and SaaS, including professional services such as consulting and implementation services, software support and maintenance. Approximately 50%-70% of revenue associated with a sale of software to be installed on-premises is recognized at a point in time when the customer benefits from obtaining access to and use of the software license, with the percentage varying based on the length of the contract and other contractual terms. The

remainder of revenue for on-premise installations is recognized over the length of the contract as maintenance and other services are provided. Upon renewal of an on-premises software contract, the same pattern of revenue recognition is followed with 50%-70% recognized upon renewal and the remaining balance recognized over the term of the contract. Revenue for a SaaS related arrangement, where the customer does not take possession of the software, is recognized over the term of the contract as services are provided. Upon renewal of a SaaS arrangement, revenue continues to be recognized as services are provided under the new contract. As a result of these differences in how portions of CRD revenue are accounted for, CRD revenue may vary more than other business units quarter to quarter.

Lending related and other fees decreased 6% in 2022 compared to 2021, reflecting lower unfunded commitments relating to our municipal and fund finance products, driven by changes in product mix. Lending related and other fees primarily consists of fee revenue associated with our fund finance, leverage loans, municipal finance, insurance and stable value wrap businesses.

Other Fee Revenue

Other fee revenue includes market-related adjustments and income associated with certain tax-advantaged investments and other equity method investments.

Other fee revenue decreased $64 million in 2022, compared to 2021, primarily driven by negative market-related adjustments which impacted other fee revenue by approximately $57 million compared to the same period in 2021.

Additional information about fee revenue is provided under "Line of Business Information" included in this Management's Discussion and Analysis.

Net Interest Income

See Table 2: Total Revenue, for the breakout of interest income and interest expense for the years ended December 31, 2022, 2021 and 2020.

NII is defined as interest income earned on interest-earning assets less interest expense incurred on interest-bearing liabilities. Interest-earning assets, which principally consist of investment securities, interest-bearing deposits with banks, loans, resale agreements and other liquid assets, are financed primarily by client deposits, short-term borrowings and long-term debt.

NIM represents the relationship between annualized FTE NII and average total interest-earning assets for the period. It is calculated by dividing FTE NII by average interest-earning assets. Revenue that is exempt from income taxes, mainly earned from certain investment securities (state and political subdivisions), is adjusted to a FTE basis using the U.S. federal and state statutory income tax rates.

NII on an FTE basis increased in 2022 compared to 2021, primarily due to higher interest rates from U.S. and international central bank rate hikes, partially offset by lower client deposits.

Net premium amortization on investment securities, which is included in interest income, was $225 million in 2022, compared to $556 million in 2021 and $575 million in 2020. The decrease in MBS premium amortization is primarily due to lower prepayments from higher long-end interest rates.

Interest income related to debt securities is recognized in our consolidated statement of income using the effective interest method, or on a basis approximating a level rate of return over the contractual or estimated life of the security. The rate of return considers any non-refundable fees or costs, as well as purchase premiums or discounts, resulting in amortization or accretion, accordingly. The amortization of premiums and accretion of discounts are adjusted for prepayments when they occur, which primarily impact mortgage-backed securities.

The following table presents the investment securities amortizable purchase premium net of discount accretion for the periods indicated:

TABLE 13: INVESTMENT SECURITIES NET PREMIUM AMORTIZATION

	Years Ended December 31,								
	2022			2021			2020		
(Dollars in millions)	MBS	Non-MBS	Total[1]	MBS	Non-MBS	Total[1]	MBS	Non-MBS	Total[1]
Unamortized premiums, net of discounts at period end	**$ 520**	**$ 208**	**$ 728**	$ 712	$ 502	$ 1,214	$ 1,173	$ 736	$ 1,909
Net premium amortization[2]	**142**	**83**	**225**	342	214	556	399	176	575

[1] The investment securities portfolio duration was 2.6 years in 2022, 2.9 years in 2021 and 3.0 years in 2020. Totals exclude premiums or discounts created from the transfer of securities from AFS to HTM. Additional information on the transfer of securities is provided in Note 3 to the consolidated financial statements in this Form 10-K.

[2] Net of discount accretion on MMLF HTM securities.

See Table 14: Average Balances and Interest Rates - Fully Taxable-Equivalent Basis, for the breakout of NII on a FTE basis for the years ended December 31, 2022, 2021 and 2020.

TABLE 14: AVERAGE BALANCES AND INTEREST RATES - FULLY TAXABLE-EQUIVALENT BASIS[1]

	Years Ended December 31,								
	2022			2021			2020		
(Dollars in millions; fully taxable-equivalent basis)	Average Balance	Interest Revenue/Expense	Rate	Average Balance	Interest Revenue/Expense	Rate	Average Balance	Interest Revenue/ Expense	Rate
Interest-bearing deposits with banks[2]	$ 76,498	$ 842	1.10 %	$ 89,996	$ (15)	(.02)%	$ 76,588	$ 76	.10 %
Securities purchased under resale agreements[3]	2,116	188	8.88	4,193	27	.63	3,452	126	3.64
Trading account assets	721	—	.01	752	—	.01	878	—	—
Investment securities:									
Investment securities available for sale	53,613	733	1.37	66,584	583	.88	58,036	761	1.31
Investment securities held-to-maturity	58,316	979	1.68	44,832	665	1.48	42,956	830	1.93
Investment securities held-to-maturity purchased under money market liquidity facility	—	—	—	314	4	1.35	8,183	117	1.43
Total Investment securities	111,929	1,712	1.53	111,730	1,252	1.12	109,175	1,708	1.56
Loans	35,117	973	2.77	31,009	640	2.07	27,525	627	2.28
Other interest-earning assets[4]	20,850	383	1.84	22,355	17	.08	11,256	55	.49
Average total interest-earning assets	247,231	4,098	1.66	260,035	1,921	.74	228,874	2,592	1.13
Cash and due from banks	3,652			5,057			3,849		
Other assets	35,547			34,651			36,611		
Average total Assets	$ 286,430			$ 299,743			$ 269,334		
Interest-bearing deposits:									
U.S.	$ 98,252	$ 887	.90 %	$ 104,848	$ 10	.01 %	$ 87,444	$ 114	.13 %
Non-U.S.[2][5]	76,842	80	.10	82,126	(273)	(.33)	68,806	(231)	(.34)
Total interest-bearing deposits[5][6]	175,094	967	.55	186,974	(263)	(.07)	156,250	(117)	(.07)
Securities sold under repurchase agreements	3,633	14	.39	667	—	—	2,615	4	.14
Short-term borrowings under money market liquidity facility	—	—	—	315	4	1.21	8,207	101	1.22
Other short-term borrowings	1,188	26	2.18	788	2	.21	2,226	18	0.78
Long-term debt	14,132	376	2.66	13,383	219	1.64	14,371	312	2.17
Other interest-bearing liabilities[7]	2,725	161	5.91	5,486	41	.75	3,176	57	1.82
Average total interest-bearing liabilities	196,772	1,544	.78	207,613	3	—	186,845	375	.20
Non-interest bearing deposits	47,780			48,430			36,975		
Other liabilities	15,992			17,615			20,464		
Preferred shareholders' equity	1,976			2,076			2,569		
Common shareholders' equity	23,910			24,009			22,481		
Average total liabilities and shareholders' equity	$ 286,430			$ 299,743			$ 269,334		
Excess of rate earned over rate paid			.87 %			.74 %			.93 %
Net interest income, fully taxable-equivalent basis		$ 2,554			$ 1,918			$ 2,217	
Net interest margin, fully taxable-equivalent basis			1.03 %			.74 %			.97 %
Tax-equivalent adjustment		(10)			(13)			(17)	
Net interest income, GAAP basis		$ 2,544			$ 1,905			$ 2,200	

[1] Rates earned/paid on interest-earning assets and interest-bearing liabilities include the impact of hedge activities associated with our asset and liability management activities where applicable.

[2] Negative values reflect the impact of interest rate environments outside of the U.S. where central bank rates were below zero for several major currencies.

[3] Reflects the impact of balance sheet netting under enforceable netting agreements of approximately $71.02 billion, $62.15 billion and $100.45 billion for the years ended December 31, 2022, 2021 and 2020, respectively. Excluding the impact of netting, the average interest rates would be approximately 0.26%, 0.04% and 0.12% for the years ended December 31, 2022, 2021 and 2020, respectively.

[4] Reflects the impact of balance sheet netting under enforceable netting agreements of approximately $5.39 billion, $$5.60 billion and $$5.65 billion for the years ended December 31, 2022, 2021 and 2020, respectively. Excluding the impact of netting, the average interest rates would be approximately 1.46%, 0.06% and 0.32% for the years ended December 31, 2022, 2021 and 2020, respectively.

[5] Average rate includes the impact of FX swap costs of approximately ($20) million, ($68) million and ($63) million for the years ended December 31, 2022, 2021 and 2020, respectively. Average rates for total interest-bearing deposits excluding the impact of FX swap costs were (0.55)%, (0.10)% and (0.03)% for the years ended December 31, 2022, 2021 and 2020, respectively.

[6] Total deposits averaged $222.87 billion, $235.40 billion and $193.23 billion for the years ended December 31, 2022, 2021 and 2020, respectively.

[7] Reflects the impact of balance sheet netting under enforceable netting agreements of approximately $4.59 billion, $5.48 billion and $6.38 billion for the years ended December 31, 2022, 2021 and 2020, respectively. Excluding the impact of netting, the average interest rates would be approximately 2.20%, 0.38% and 0.60% for the years ended December 31, 2022, 2021 and 2020, respectively.

Changes in the components of interest-earning assets and interest-bearing liabilities are discussed in more detail below. Additional information about the components of interest income and interest expense is provided in Note 17 to the consolidated financial statements in this Form 10-K.

Average total interest-earning assets were $247.23 billion in 2022 compared to $260.04 billion in 2021. The decrease is primarily due to lower client deposit balances.

Interest-bearing deposits with banks averaged $76.50 billion in 2022 compared to $90.00 billion in 2021. These deposits primarily reflect our maintenance of cash balances at the Federal Reserve, the European Central Bank (ECB) and other non-U.S. central banks. The lower levels of average cash balances reflect lower levels of client deposits.

Securities purchased under resale agreements averaged $2.12 billion in 2022 compared to $4.19 billion in 2021. As a member of FICC, we may net securities sold under repurchase agreements against those purchased under resale agreements with counterparties that are also members of the clearing organization, when specific netting criteria are met. The impact of balance sheet netting was $71.02 billion on average in 2022 compared to $62.15 billion in 2021, primarily driven by an increase in FICC repo volumes.

We are a direct and sponsoring member of FICC. As a sponsoring member within FICC, we enter into repurchase and resale transactions in eligible securities with sponsored clients and with other FICC members and, pursuant to FICC Government Securities Division rules, submit, novate and net the transactions. We may sponsor clients to clear their eligible repurchase transactions with FICC, backed by our guarantee to FICC of the prompt and full payment and performance of our sponsored member clients' respective obligations. We generally obtain a security interest from our sponsored clients in the high quality securities collateral that they receive, which is designed to mitigate our potential exposure to FICC.

Additionally, as a member of FICC, we may be required to pay a pro rata share of the losses incurred by the organization and provide liquidity support in the event of the default of another member to the extent that the defaulting member's clearing fund obligation and the prescribed loss allocation to FICC is depleted. It is difficult to estimate our maximum possible exposure under the membership agreement, since this would require an assessment of future claims that may be made against us that have not yet occurred. At December 31, 2022 and 2021, we did not record any liabilities under these arrangements.

Average investment securities increased to $111.93 billion in 2022 from $111.73 billion in 2021, primarily driven by growth in U.S. Treasuries, MBS and CMBS balances, partially offset by a reduction in credit-sensitive assets.

Loans averaged $35.12 billion in 2022 compared to $31.01 billion in 2021. Average core loans, which exclude overdrafts and highlight our efforts to grow our lending portfolio, averaged $29.10 billion in 2022 compared to $26.76 billion in 2021. The increase is primarily due to growth in CLOs in loan form and consumer real estate loans, partially offset by a decline in leveraged loans. Additional information about these loans is provided in Note 4 to the consolidated financial statements in this Form 10-K.

Average other interest-earning assets, largely associated with our enhanced custody business, decreased to $20.85 billion in 2022 from $22.36 billion in 2021, primarily driven by a decrease in the level of cash collateral posted. Enhanced custody is our securities financing business where we act as principal with respect to our custody clients and generate securities finance revenue.

Aggregate average total interest-bearing deposits decreased to $175.09 billion in 2022 from $186.97 billion in 2021. The decrease is driven by higher market rates from central bank rate hikes, the impact of quantitative tightening, currency translation and equity market declines. Future deposit levels will be influenced by the underlying asset servicing business, client deposit behavior and market conditions, including the general levels of U.S. and non-U.S. interest rates.

Average other short-term borrowings increased to $1.19 billion in 2022 from $0.79 billion in 2021.

Average long-term debt was $14.13 billion in 2022 compared to $13.38 billion in 2021. These amounts reflect issuances, redemptions and maturities of senior debt during the respective periods.

Average other interest-bearing liabilities were $2.73 billion in 2022 compared to $5.49 billion in 2021. Other interest-bearing liabilities primarily reflect our level of cash collateral received from clients in connection with our enhanced custody business, which is presented on a net basis where we have enforceable netting agreements.

Several factors could affect future levels of NII and NIM, including the volume and mix of client deposits and funding sources; central bank actions; balance sheet management activities; changes in the level and slope of U.S. and non-U.S. interest rates; revised or proposed regulatory capital or liquidity standards, or interpretations of those standards; the yields earned on securities purchased compared to the yields earned on securities sold or matured and

changes in the type and amount of credit or other loans we extend.

Based on market conditions and other factors, including regulatory standards, we continue to reinvest the majority of the proceeds from pay-downs and maturities of investment securities in highly-rated U.S. and non-U.S. securities, such as federal agency MBS, sovereign debt securities and U.S. Treasury and agency securities. The pace at which we reinvest and the types of investment securities purchased will depend on the impact of market conditions, the implementation of regulatory standards, including interpretation of those standards and other factors over time. We expect these factors and the levels of global interest rates to impact our reinvestment program and future levels of NII and NIM.

Provision for Credit Losses

We recorded a $20 million provision for credit losses in 2022, due to a downward shift in management's economic outlook that was partially offset by a reduction in overall loan portfolio risk, compared to a $33 million release of credit reserves in 2021.

Additional information is provided under "Loans" in "Financial Condition" in this Management's Discussion and Analysis and in Note 4 to the consolidated financial statements in this Form 10-K.

Expenses

Table 15: Expenses, provides the breakout of expenses for the years ended December 31, 2022, 2021 and 2020. Total expenses decreased 1% compared to 2021, as continued productivity and optimization savings, as well as the benefit from currency translation were partially offset by ongoing business investments and merit increases, professional fees, recoverable client-related expenses, marketing and travel costs. Currency translation reduced expenses by 3% in 2022 compared to 2021.

TABLE 15: EXPENSES

	Years Ended December 31,				
(Dollars in millions)	2022	2021	2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020
Compensation and employee benefits	$ 4,428	$ 4,554	$ 4,450	(3)%	2 %
Information systems and communications	1,630	1,661	1,550	(2)	7
Transaction processing services	971	1,024	978	(5)	5
Occupancy	394	444	489	(11)	(9)
Amortization of other intangible assets	238	245	234	(3)	5
Acquisition and restructuring costs	65	65	50	—	30
Other:					
Professional services	375	334	364	12	(8)
Other	700	562	601	25	(6)
Total other	1,075	896	965	20	(7)
Total expenses	$ 8,801	$ 8,889	$ 8,716	(1)	2
Number of employees at year-end	42,226	38,784	39,439	9	(2)

Compensation and employee benefits expenses decreased 3% in 2022 compared to 2021, primarily due to the impact of currency translation and a decrease in notable items, partially offset by higher headcount and merit increases. Currency translation decreased compensation and employee benefits expenses by 3% in 2022 relative to 2021.

Total headcount increased 9% as of December 31, 2022 compared to December 31, 2021, primarily in global hubs driven by operational support for new business growth segments, as well as technology investments and in-sourcing.

Information systems and communications expenses decreased 2% in 2022 compared to 2021, primarily due to productivity and vendor savings initiatives, partially offset by technology infrastructure investments.

Transaction processing services expenses decreased 5% in 2022 compared to 2021, primarily due to lower sub-custody costs and the impact of currency translation which reduced transaction processing services expenses by 2% in 2022 compare to 2021.

Occupancy expenses decreased 11% in 2022 compared 2021, primarily due to footprint optimization and the impact of currency translation which reduced occupancy expenses by 4% in 2022 compared to 2021.

Amortization of other intangible assets decreased 3% in 2022 compared to 2021, primarily reflecting the impact of currency translation which reduced amortization of other intangible assets by 3% in 2022 compared to 2021.

Other expenses increased 20% in 2022 compared to 2021, primarily due to higher professional services, recoverable client-related expenses, securities processing costs, travel costs and marketing expenses.

Acquisition and Restructuring Costs

Acquisition and restructuring costs were $65 million in 2022, unchanged compared to 2021. We recorded approximately $65 million and $13 million in 2022 and 2021, respectively, of acquisition costs related to the BBH Investor Services acquisition transaction we are no longer pursuing. In addition, in 2021, we also recorded approximately $52 million of acquisition costs related to our 2018 acquisition of CRD for which we no longer distinguished certain costs as acquisition costs starting in 2022.

Repositioning Charges

Expenses for 2022 included repositioning charges of $78 million, consisting of $50 million of compensation and benefits expenses primarily related to streamlining the Investment Services organization, $20 million of occupancy charges

related to real estate footprint optimization and $8 million of BBH-related repositioning charges. The BBH-related repositioning charges were recognized in acquisition and restructuring expenses. Expenses included a net repositioning release of $3 million in 2021.

The following table presents aggregate activity for repositioning charges and activity related to previous Beacon restructuring charges for the periods indicated:

TABLE 16: RESTRUCTURING AND REPOSITIONING CHARGES

(In millions)	Employee Related Costs	Real Estate Actions	Asset and Other Write-offs	Total
Accrual Balance at December 31, 2019	$ 190	$ 7	$ 1	$ 198
Accruals for Beacon	(4)	—	—	(4)
Accruals for Repositioning Charges	82	51	—	133
Payments and Other Adjustments	(78)	(52)	(1)	(131)
Accrual Balance at December 31, 2020	190	6	—	196
Accruals for Beacon	(1)	—	—	(1)
Accruals for Repositioning Charges	(32)	29	—	(3)
Payments and Other Adjustments	(89)	(29)	—	(118)
Accrual Balance at December 31, 2021	68	6	—	74
Accruals for Repositioning Charges	**58**	**20**	**—**	**78**
Payments and other adjustments	**(43)**	**(21)**	**—**	**(64)**
Accrual Balance at December 31, 2022	**$ 83**	**$ 5**	**$ —**	**$ 88**

Income Tax Expense

Income tax expense was $553 million in 2022 compared to $478 million in 2021. Our effective tax rate was 16.6% in 2022 compared to 15.1% in 2021. The 2021 effective tax rate included higher discrete benefits from the completion of tax audits than we experienced in 2022.

Additional information regarding income tax expense, including unrecognized tax benefits and tax contingencies, are provided in Notes 13 and 22 to the consolidated financial statements in this Form 10-K.

LINE OF BUSINESS INFORMATION

Our operations are organized into two lines of business: Investment Servicing and Investment Management, which are defined based on products and services provided. The results of operations for these lines of business are not necessarily comparable with those of other companies, including companies in the financial services industry. For the description of our lines of business, refer to "Lines of Business" in Item 1 in this Form 10-K. Certain amounts that are not allocated to our two lines of business, including repositioning charges, employee costs, acquisition costs, revenue-related recoveries and certain legal accruals. See Note 24 to the consolidated financial statements in this Form 10-K.

Investment Servicing

TABLE 17: INVESTMENT SERVICING LINE OF BUSINESS RESULTS

(Dollars in millions, except where otherwise noted)	Years Ended December 31, 2022	2021	2020	% Change 2022 vs. 2021	% Change 2021 vs. 2020
Servicing fees	**$ 5,087**	$ 5,531	$ 5,157	(8)%	7 %
Foreign exchange trading services	**1,271**	1,149	1,299	11	(12)
Securities finance	**397**	402	342	(1)	18
Software and processing fees	**789**	738	685	7	8
Other fee revenue	**46**	59	31	(22)	90
Total fee revenue	**7,590**	7,879	7,514	(4)	5
Net interest income	**2,551**	1,919	2,211	33	(13)
Total other income	**(2)**	(1)	4	nm	nm
Total revenue	**10,139**	9,797	9,729	3	1
Provision for credit losses	**20**	(33)	88	nm	nm
Total expenses	**7,260**	7,182	7,071	1	2
Income before income tax expense	**$ 2,859**	$ 2,648	$ 2,570	8	3
Pre-tax margin	**28 %**	27 %	26 %		
Average assets (in billions)	**$ 283.2**	$ 296.5	$ 266.4		

nm Not meaningful

Servicing Fees

Servicing fees, as presented in Table 17: Investment Servicing Line of Business Results, decreased 8% in 2022 compared to 2021 primarily due to normal pricing headwinds, lower average market levels and lower client activity and adjustments, partially offset by net new business. Currency translation decreased servicing fees revenue by 3% in 2022 relative to 2021.

For additional information about servicing fees and the impact of worldwide equity and fixed-income valuations on our fee revenue, as well as other key drivers of our servicing fee revenue, refer to "Fee Revenue" in "Consolidated Results of Operations" included in this Management's Discussion and Analysis.

Expenses

Total expenses for Investment Servicing increased 1% in 2022 compared to 2021, as expense growth from higher technology infrastructure investments, higher headcount and merit increases was partially offset by productivity savings, on-going expense management initiatives and the benefit of currency translation, which reduced expenses for Investment Servicing by 3% in 2022 relative to 2021. Seasonal deferred incentive compensation expense and payroll taxes were $143 million in 2022 compared to $124 million in 2021. Additional information about expenses is provided under "Expenses" in "Consolidated Results of Operations" included in this Management's Discussion and Analysis.

Investment Management

TABLE 18: INVESTMENT MANAGEMENT LINE OF BUSINESS RESULTS

	Years Ended December 31,				
(Dollars in millions, except where otherwise noted)	**2022**	**2021**	**2020**	**% Change 2022 vs. 2021**	**% Change 2021 vs. 2020**
Management fees[1]	**$ 1,939**	$ 2,053	$ 1,880	(6)%	9 %
Foreign exchange trading services[2]	**82**	62	64	32	(3)
Securities finance	**19**	14	14	36	—
Other fee revenue[3]	**(47)**	4	27	nm	(85)
Total fee revenue	**1,993**	2,133	1,985	(7)	7
Net interest income	**(7)**	(14)	(11)	(50)	27
Total revenue	**1,986**	2,119	1,974	(6)	7
Total expenses	**1,396**	1,445	1,471	(3)	(2)
Income before income tax expense	**$ 590**	$ 674	$ 503	(12)	34
Pre-tax margin	**30 %**	32 %	25 %		
Average assets (in billions)	**$ 3.2**	$ 3.2	$ 2.9		

[1] Includes revenues from SPDR® Gold Shares and SPDR® Gold MiniSharesSM Trust AUM where we are not the investment manager but act as the marketing agent.
[2] Includes revenue for reimbursements received for certain ETFs associated with State Street Global Advisors where we act as the distribution and marketing agent.
[3] Includes other revenue items that are primarily driven by equity market movements.
[nm] Not meaningful

Investment Management total revenue decreased 6% in 2022 compared to 2021.

Management Fees

Management fees decreased 6% in 2022 compared to 2021, primarily due to lower average equity and fixed income market levels, a previously reported client-specific pricing adjustment and institutional net outflows, partially offset by the absence of the impact of money market fee waivers and net inflows from cash and ETFs. Currency translation decreased management fees by 2% in 2022 relative to 2021.

For additional information about the impact of worldwide equity and fixed-income valuations, as well as other key drivers of our management fees revenue, refer to "Fee Revenue" in "Consolidated Results of Operations" included in this Management's Discussion and Analysis.

Expenses

Total expenses for Investment Management decreased 3% in 2022 compared to 2021, as savings from on-going expense management initiatives and lower incentive compensation were partially offset by merit increases. Currency translation reduced expenses for Investment Management by 2% in 2022 relative to 2021. Seasonal deferred incentive compensation expense and payroll taxes were $65 million in 2022, compared to $52 million in 2021.

Additional information about expenses is provided under "Expenses" in "Consolidated Results of Operations" included in this Management's Discussion and Analysis.

For additional information about our two lines of business, as well as the revenues, expenses and capital allocation methodologies associated with them, refer to Note 24 to the consolidated financial statements in this Form 10-K.

FINANCIAL CONDITION

The structure of our consolidated statement of condition is primarily driven by the liabilities generated by our Investment Servicing and Investment Management lines of business. Our clients' needs and our operating objectives determine the volume, mix and currency denomination of our assets and liabilities. As our clients execute their worldwide cash management and investment activities, they utilize deposits and short-term investments that constitute the majority of our liabilities. These liabilities are generally in the form of interest-bearing transaction account deposits, which are denominated in a variety of currencies; non-interest-bearing demand deposits; and repurchase agreements, which generally serve as short-term investment alternatives for our clients.

Deposits and other liabilities resulting from client initiated transactions are invested in assets that generally have contractual maturities significantly longer than our liabilities; however, we evaluate the operational nature of our deposits and seek to maintain appropriate short-term liquidity of those liabilities that are not operational in nature and maintain longer-termed assets for our operational deposits. Our assets consist primarily of securities held in our AFS or HTM portfolios and short-duration financial instruments, such as interest-bearing deposits with banks and securities purchased under resale agreements. The actual mix of assets is determined by the characteristics of the client liabilities and our desire to maintain a well-diversified portfolio of high-quality assets.

Additional information on our financial condition is presented in Table 14: Average Balances and Interest Rates - Fully Taxable-Equivalent Basis. We believe the average statement of condition is a better measure of the balance

sheet trends as period-end balances can be impacted by the timing of client activities including deposits and withdrawals.

Investment Securities

TABLE 19: CARRYING VALUES OF INVESTMENT SECURITIES

	As of December 31,		
(In millions)	**2022**	**2021**	**2020**
Available-for-sale:			
U.S. Treasury and federal agencies:			
Direct obligations	**$ 7,981**	$ 17,939	$ 6,575
Mortgage-backed securities	**8,509**	18,208	14,305
Total U.S. Treasury and federal agencies	**16,490**	36,147	20,880
Non-U.S. debt securities:			
Mortgage-backed securities	**1,623**	1,995	1,996
Asset-backed securities[1]	**1,669**	2,087	2,291
Non-U.S. sovereign, supranational and non-U.S. agency	**14,089**	23,547	22,087
Other[2]	**2,091**	3,098	3,355
Total non-U.S. debt securities	**19,472**	30,727	29,729
Asset-backed securities:			
Student loans[3]	**115**	211	314
Collateralized loan obligations[4]	**2,355**	91	2,966
Non-agency CMBS and RMBS[5]	**231**	52	78
Other	**88**	2,155	90
Total asset-backed securities	**2,789**	2,509	3,448
State and political subdivisions	**823**	1,272	1,548
Other U.S. debt securities[6]	**1,005**	2,744	3,443
Total available-for-sale securities	**$ 40,579**	$ 73,399	$ 59,048
Held-to-maturity:			
U.S. Treasury and federal agencies:			
Direct obligations	**$ 11,693**	$ 2,170	$ 6,057
Mortgage-backed securities	**42,307**	33,481	36,901
Total U.S. Treasury and federal agencies	**54,000**	35,651	42,958
Non-U.S. debt securities:			
Mortgage-backed securities	**—**	—	303
Non-U.S. sovereign, supranational and non-U.S. agency	**6,603**	1,564	342
Total non-U.S. debt securities	**6,603**	1,564	645
Asset-backed securities:			
Student loans[3]	**3,955**	4,908	4,774
Non-agency CMBS and RMBS[7]	**142**	307	554
Total asset-backed securities	**4,097**	5,215	5,328
Total[8]	**64,700**	42,430	48,931
Held-to-maturity under money market mutual fund liquidity facility[8]	**—**	—	3,300
Total held-to-maturity securities[8]	**$ 64,700**	$ 42,430	$ 52,231

[1] As of December 31, 2022, 2021 and 2020, the fair value non-U.S. collateralized loan obligations of $0.86 billion, $0.83 billion and $0.96 billion, respectively.

[2] As of December 31, 2022, 2021 and 2020, the fair value includes non-U.S. corporate bonds of $1.14 billion, $1.53 billion and $1.88 billion, respectively.

[3] Primarily comprised of securities guaranteed by the federal government with respect to at least 97% of defaulted principal and accrued interest on the underlying loans.

[4] Excludes collateralized loan obligations in loan form. Refer to Note 4 to the consolidated financial statements in this Form 10-K for additional information.

[5] Consists entirely of non-agency CMBS as of December 31, 2022, 2021 and 2020.

[6] As of December 31, 2022, 2021 and 2020, the fair value of U.S. corporate bonds was $1.01 billion, $2.44 billion and $3.44 billion, respectively.

[7] As of December 31, 2022, 2021 and 2020, the total amortized cost included $133 million, $292 million and $464 million, respectively, of non-agency CMBS and $9 million, $14 million and $90 million, respectively, of non-agency RMBS.

[8] As of December 31, 2020, we recognized an allowance for credit losses on all HTM securities of $3 million, inclusive of $1 million related to HTM securities purchased under the money market mutual fund liquidity facility.

Additional information about our investment securities portfolio is provided in Note 3 to the consolidated financial statements in this Form 10-K.

We manage our investment securities portfolio to align with the interest rate and duration characteristics of our client liabilities and in the context of the overall structure of our consolidated statement of condition, in consideration of the global interest rate environment. We consider a well-diversified, high-credit quality investment securities portfolio to be an important element in the management of our consolidated statement of condition.

In 2022, we completed a number of actions to mitigate additional AOCI risk in the current environment including a $23.56 billion transfer of securities from AFS to HTM. While these measures may serve to mitigate additional AOCI risk, we continue to be exposed to risks associated with sudden or significant AOCI deterioration, particularly in an environment of continuing significant, and potentially, historic interest rate increases. There can be no assurance that we will not experience further, potentially material AOCI deterioration.

Average duration of our investment securities portfolio was 2.6 years and 2.9 years as of December 31, 2022 and 2021, respectively.

Approximately 95% of the carrying value of the portfolio was rated "AA" or higher as of both December 31, 2022 and 2021 as follows:

TABLE 20: INVESTMENT PORTFOLIO BY EXTERNAL CREDIT RATING

	December 31, 2022	December 31, 2021
AAA[1]	**84 %**	79 %
AA	**11**	13
A	**3**	4
BBB	**2**	4
	100 %	100 %

[1] Includes U.S. Treasury and federal agency securities that are split-rated, "AAA" by Moody's Investors Service and "AA+" by Standard & Poor's and also includes Agency MBS securities which are not explicitly rated but which have an explicit or assumed guarantee from the U.S. government.

As of December 31, 2022 and 2021, the investment portfolio was diversified with respect to asset class composition. The following table presents the composition of these asset classes.

TABLE 21: INVESTMENT PORTFOLIO BY ASSET CLASS

	December 31, 2022	December 31, 2021
U.S. Agency Mortgage-backed securities	**37 %**	33 %
Non-U.S. sovereign, supranational and non-U.S. agency	**19**	21
U.S. Treasuries	**19**	17
Asset-backed securities	**9**	10
Other credit	**16**	19
	100 %	100 %

Non-U.S. Debt Securities

Approximately 25% and 28% of the aggregate carrying value of our investment securities portfolio was non-U.S. debt securities as of December 31, 2022 and 2021, respectively.

TABLE 22: NON-U.S. DEBT SECURITIES[1]

(In millions)	December 31, 2022	December 31, 2021
Available-for-sale:		
Canada	**$ 3,685**	$ 4,502
Australia	**2,159**	3,019
United Kingdom	**1,449**	1,961
Germany	**1,147**	2,130
France	**1,059**	2,180
Austria	**769**	1,478
Japan	**768**	1,332
Hong Kong	**701**	—
Netherlands	**542**	1,109
Italy	**290**	803
Spain	**250**	1,227
Republic of Korea	**230**	201
Brazil	**202**	—
Finland	**185**	837
Other[2]	**6,036**	9,948
Total	**$ 19,472**	$ 30,727
Held-to-maturity:		
Spain	**$ 804**	$ —
Belgium	**703**	—
France	**638**	—
Ireland	**442**	—
Austria	**362**	—
Singapore	**269**	222
Finland	**213**	—
Netherlands	**172**	—
Germany	**123**	—
Other[2]	**2,877**	1,342
Total	**$ 6,603**	$ 1,564

[1] Geography is determined primarily based on the domicile of collateral or issuer.

[2] As of December 31, 2022, other non-U.S. investments include $5.7 billion supranational bonds in AFS securities and $2.9 billion supranational bonds in HTM securities.

Approximately 86% and 81% of the aggregate carrying value of these non-U.S. debt securities was rated "AAA" or "AA" as of December 31, 2022 and 2021, respectively. The majority of these securities comprised senior positions within the security structures; these positions have a level of protection provided through subordination and other forms of credit protection. As of December 31, 2022 and 2021, approximately 26% and 24%, respectively, of the aggregate carrying value of these non-U.S. debt securities was floating-rate.

As of December 31, 2022, our non-U.S. debt securities had an average market-to-book ratio of 96.5%, and an aggregate pre-tax net unrealized loss of $937 million, composed of gross unrealized gains of $1 million and gross unrealized losses of $938 million. These unrealized amounts included:

- a pre-tax net unrealized loss of $633 million, composed of gross unrealized gains of $1 million and gross unrealized losses of $634 million, associated with non-U.S. AFS debt securities; and
- a pre-tax net unrealized loss of $304 million associated with non-U.S. HTM debt securities.

As of December 31, 2022, the underlying collateral for non-U.S. MBS and ABS primarily included mortgages in Australia, the U.K., the Netherlands and Italy. The securities listed under "Canada" were composed of Canadian government securities and provincial bonds, corporate debt and non-U.S. agency securities. The securities listed under "France" were composed of sovereign bonds, corporate debt, covered bonds, ABS and Non-U.S. agency securities. The securities listed under "Japan" were substantially composed of Japanese government securities.

Municipal Obligations

We carried approximately $0.82 billion of municipal securities classified as state and political subdivisions in our investment securities portfolio as of December 31, 2022, as shown in Table 19: Carrying Values of Investment Securities, all of which were classified as AFS. As of December 31, 2022, we also provided approximately $6.98 billion of credit and liquidity facilities to municipal issuers.

TABLE 23: STATE AND MUNICIPAL OBLIGORS[1]

(Dollars in millions)	Total Municipal Securities	Credit and Liquidity Facilities[2]	Total	% of Total Municipal Exposure
December 31, 2022				
State of Issuer:				
Texas	$ 178	$ 2,395	$ 2,573	33 %
New York	154	1,607	1,761	23
California	84	1,299	1,383	18
Total	$ 416	$ 5,301	$ 5,717	
December 31, 2021				
State of Issuer:				
Texas	$ 221	$ 2,357	$ 2,578	25 %
California	108	2,005	2,113	21
New York	271	1,112	1,383	14
Massachusetts	245	696	941	9
Tennessee	—	491	491	5
Total	$ 845	$ 6,661	$ 7,506	

[1] Represented 5% or more of our aggregate municipal credit exposure of approximately $7.81 billion and $10.22 billion across our businesses as of December 31, 2022 and 2021, respectively.
[2] Includes municipal loans which are also presented within Table 25: U.S. and Non-U.S. Loans .

Our aggregate municipal securities exposure presented in Table 23: State and Municipal Obligors, was concentrated primarily with highly-rated counterparties, with approximately 93% of the obligors rated "AA" or higher as of December 31, 2022. As of that date, approximately 31% and 69% of our aggregate municipal securities exposure was associated with general obligation and revenue bonds, respectively. The portfolios are also diversified geographically, with the states that represent our largest exposures widely dispersed across the U.S.

Additional information with respect to our assessment of impairment of our municipal securities is provided in Note 3 to the consolidated financial statements in this Form 10-K.

TABLE 24: CONTRACTUAL MATURITIES AND YIELDS

As of December 31, 2022	Under 1 Year		1 to 5 Years		6 to 10 Years		Over 10 Years		Total
(Dollars in millions)	Amount	Yield	Amount	Yield	Amount	Yield	Amount	Yield	Amount
Available-for-sale[1]:									
U.S. Treasury and federal agencies:									
Direct obligations	$ 1,940	0.52 %	$ 5,496	1.08 %	$ 545	1.66 %	$ —	— %	$ 7,981
Mortgage-backed securities	49	4.38	454	4.35	6,345	4.06	1,661	3.02	8,509
Total U.S. treasury and federal agencies	1,989		5,950		6,890		1,661		16,490
Non-U.S. debt securities:									
Mortgage-backed securities	58	3.19	382	3.04	—	—	1,183	3.87	1,623
Asset-backed securities	342	2.37	578	2.43	444	3.05	305	2.50	1,669
Non-U.S. sovereign, supranational and non-U.S. agency	4,567	0.74	6,897	1.52	2,625	3.10	—	—	14,089
Other	187	1.94	1,769	2.24	120	2.60	15	2.12	2,091
Total non-U.S. debt securities	5,154		9,626		3,189		1,503		19,472
Asset-backed securities:									
Student loans	39	6.88	—	—	—	—	76	4.82	115
Collateralized loan obligations	182	5.10	390	4.30	1,205	5.08	578	5.40	2,355
Non-agency CMBS and RMBS	—	—	—	—	—	—	231	5.57	231
Other	—	—	88	5.06	—	—	—	—	88
Total asset-backed securities	221		478		1,205		885		2,789
State and political subdivisions[2]	144	6.24	266	4.71	373	5.99	40	6.21	823
Other U.S. debt securities	117	2.13	850	2.16	38	3.67	—	—	1,005
Total	$ 7,625		$ 17,170		$ 11,695		$ 4,089		$ 40,579
Held-to-maturity[1]:									
U.S. Treasury and federal agencies:									
Direct obligations	$ 2,329	0.37 %	$ 9,327	0.86 %	$ 24	1.66 %	$ 13	4.29 %	$ 11,693
Mortgage-backed securities	154	2.86	578	3.26	4,627	1.93	36,948	2.36	42,307
Total U.S. treasury and federal agencies	2,483		9,905		4,651		36,961		54,000
Non-U.S. debt securities:									
Non-U.S. sovereign, supranational and non-U.S. agency	1,518	1.04	4,520	1.70	565	0.49	—	—	6,603
Total non-U.S. debt securities	1,518		4,520		565		—		6,603
Asset-backed securities:									
Student loans	290	4.83	8	4.80	931	5.30	2,726	4.87	3,955
Non-agency CMBS and RMBS	122	4.94	—	—	—	—	20	4.13	142
Total asset-backed securities	412		8		931		2,746		4,097
Total	$ 4,413		$ 14,433		$ 6,147		$ 39,707		$ 64,700

[1] The maturities of MBS, ABS and CMOs are based on expected principal payments.
[2] Yields were calculated on a FTE basis, using applicable statutory tax rates (21.0% as of December 31, 2022).

Loans

TABLE 25: U.S. AND NON- U.S. LOANS

(In millions)	As of December 31, 2022	2021	2020
Domestic[1]:			
Commercial and financial:			
Fund Finance[2]	$ 12,154	$ 12,296	$ 11,531
Leveraged Loans	2,431	3,106	2,923
Overdrafts	1,707	1,796	1,894
Collateralized loan obligations in loan form	100	100	—
Other[3]	1,871	2,262	2,688
Commercial real estate	2,985	2,554	2,096
Total domestic	21,248	22,114	21,132
Foreign[1]:			
Commercial and financial:			
Fund Finance[2]	3,949	4,965	4,432
Leveraged Loans	1,118	1,328	1,242
Overdrafts	1,094	1,312	1,088
Collateralized loan obligations in loan form	4,741	2,813	—
Other[3]	—	—	31
Total foreign	10,902	10,418	6,793
Total loans[4]	32,150	32,532	27,925
Allowance for loan losses	(97)	(87)	(122)
Loans, net of allowance	$ 32,053	$ 32,445	$ 27,803

[1] Domestic and foreign categorization is based on the borrower's country of domicile.

[2] Fund finance loans include primarily $7.57 billion private equity capital call finance loans, $6.61 billion loans to real money funds and $1.11 billion loans to business development companies as of December 31, 2022, compared to $9.15 billion and $8.38 billion private equity capital call finance loans, $6.40 billion and $6.04 billion loans to real money funds and $1.39 billion and $832 million loans to business development companies as of December 31, 2021 and 2020, respectively.

[3] Includes $1.51 billion securities finance loans, $321 million loans to municipalities and $42 million other loans as of December 31, 2022, $1.78 billion securities finance loans, $455 million loans to municipalities and $23 million other loans as of December 31, 2021 and $1.91 billion securities finance loans, $754 million loans to municipalities and $54 million other loans as of December 31, 2020.

[4] As of December 31, 2022, excluding overdrafts, floating rate loans totaled $26.57 billion and fixed rate loans totaled $2.77 billion. We have entered into interest rate swap agreements to hedge the forecasted cash flows associated with LIBOR indexed floating-rate loans. See Note 10 to the consolidated financial statements in this Form 10-K for additional details.

The decrease in domestic loans was primarily driven by leveraged loans and the increase in foreign loans was primarily driven by an increase in collateralized loan obligations in loan forms, partially offset by a decrease in fund finance loans as of December 31, 2022 compared to December 31, 2021.

As of December 31, 2022 and 2021, our leveraged loans totaled approximately $3.55 billion and $4.43 billion, respectively. We sold $935 million of leveraged loans in 2022.

In addition, we had binding unfunded commitments as of December 31, 2022 and 2021 of $98 million and $124 million, respectively, to participate in syndications of leveraged loans. Additional information about these unfunded commitments is provided in Note 12 to the consolidated financial statements in this Form 10-K.

These leveraged loans, which are primarily rated "speculative" under our internal risk-rating framework (refer to Note 4 to the consolidated financial statements in this Form 10-K), are externally rated "BBB," "BB" or "B," with approximately 96% and 94% of the loans rated "BB" or "B" as of December 31, 2022 and 2021, respectively. Our investment strategy involves generally limiting our investment to larger, more liquid credits underwritten by major global financial institutions, applying our internal credit analysis process to each potential investment and diversifying our exposure by counterparty and industry segment. However, these loans have significant exposure to credit losses relative to higher-rated loans in our portfolio.

Additional information about all of our loan segments, as well as underlying classes, is provided in Note 4 to the consolidated financial statements in this Form 10-K.

No loans were modified in troubled debt restructurings as of both December 31, 2022 and 2021.

TABLE 26: CONTRACTUAL MATURITIES FOR LOANS

(In millions)	As of December 31, 2022 Under 1 year	1 to 5 years	5 to 15 years	Total
Domestic:				
Commercial and financial	$ 11,843	$ 4,951	$ 1,469	$ 18,263
Commercial real estate	89	1,218	1,678	2,985
Total domestic	11,932	6,169	3,147	21,248
Foreign:				
Commercial and financial	3,838	1,873	5,191	10,902
Total foreign	3,838	1,873	5,191	10,902
Total loans	$ 15,770	$ 8,042	$ 8,338	$ 32,150

TABLE 27: CLASSIFICATION OF LOAN BALANCES DUE AFTER ONE YEAR

(In millions)	As of December 31, 2022 Loans with predetermined interest rates	Loans with floating or adjustable interest rates
Domestic:		
Commercial and financial	$ 321	$ 6,098
Commercial real estate	2,409	488
Total domestic	2,730	6,586
Foreign:		
Commercial and financial	—	7,064
Total foreign	—	7,064
Total loans	$ 2,730	$ 13,650

Allowance for credit losses

TABLE 28: ALLOWANCE FOR CREDIT LOSSES

(In millions)	Years Ended December 31, 2022	2021	2020
Allowance for credit losses:			
Beginning balance	**$ 108**	$ 148	$ 93
Provision for credit losses (funded commitments)[1]	**16**	(29)	83
Provisions for credit losses (unfunded commitments)	**4**	(2)	3
Provisions for credit losses (investment securities and all other)	**—**	(2)	2
Charge-offs[2]	**(7)**	(2)	(41)
Other[3]	**—**	(5)	8
Ending balance	**$ 121**	$ 108	$ 148

[1] The provision for credit losses is primarily related to commercial and financial loans.

[2] The charge-offs are related to commercial and financial loans.

[3] Consists primarily of foreign currency translation.

We recorded a provision for credit losses of $20 million in 2022, due to a downward shift in management's economic outlook that was partially offset by a reduction in overall loan portfolio risk, compared to $33 million release of credit reserves in 2021.

As of December 31, 2022, approximately $73 million of our allowance for credit losses was related to leveraged loans included in the commercial and financial segment compared to $61 million as of December 31, 2021. As our view on current and future economic scenarios changes, our allowance for credit losses related to these loans may be impacted through a change to the provisions for credit losses, reflecting credit migration within our loan portfolio, as well as changes in management's economic outlook as of year-end. The remaining $48 million and $47 million as of December 31, 2022 and 2021, respectively, was related to other loans, commercial real estate loans, off-balance sheet commitments and other financial assets held at amortized cost, including investment securities. As of December 31, 2022, the allowance for credit losses represented 0.3% of total loans.

Additional information with respect to the allowance for credit losses, net impairment losses and gross unrealized losses related to investment securities, is provided in "Allowance for Credit Losses" under Significant Accounting Estimates and Note 3 to the consolidated financial statements in this Form 10-K.

RISK MANAGEMENT

Overview

In the normal course of our business activities, we are exposed to a variety of risks, some that are inherent in the financial services industry, and others that are more specific to our business activities. Our risk management framework focuses on material risks, which include the following:

- credit and counterparty risk;
- liquidity risk, funding and management;
- operational risk;
- information technology risk;
- operational resiliency risk;
- market risk associated with our trading activities;
- market risk associated with our non-trading activities, referred to as asset and liability management, consisting primarily of interest rate risk;
- model risk;
- strategic risk; and
- reputational, fiduciary and business conduct risk.

Many of these risks, as well as certain factors underlying each of them, could affect our businesses and our consolidated financial statements, and are discussed in detail under "Risk Factors" in this Form 10-K.

The identification, assessment, monitoring, mitigation and reporting of risks are essential to our financial performance and successful management of our businesses. Accordingly, the scope of our business requires that we consider these risks as part of a comprehensive and well-integrated risk management function.

These risks, if not effectively managed, can result in losses to us as well as erosion of our capital and damage to our reputation. Our approach to risk management, including Board and senior management oversight and a system of policies, procedures, limits, risk measurement and monitoring and internal controls, allows for an assessment of risks within a framework for evaluating opportunities for the prudent use of capital that appropriately balances risk and return.

Our objective is to optimize our returns while operating at a prudent level of risk. In support of this objective, we have instituted a risk appetite framework that aligns our business strategy and financial objectives with the level of risk that we are willing to incur.

We manage risk with a focus on the following objectives:

- A culture of risk awareness that extends across all of our business activities;
- The identification, classification and quantification of our material risks;
- The establishment of our risk appetite and associated limits and policies, and our compliance with these limits;
- The establishment of a risk management structure at the "top of the house" that enables the control and coordination of risk-taking across the business lines;
- The implementation of stress testing practices and a dynamic risk-assessment capability (additional information with respect to our stress-testing process and practices is provided under "Capital" in this Management's Discussion and Analysis);
- A direct link between risk and strategic-decision making processes and incentive compensation practices; and
- The overall flexibility to adapt to the ever-changing business and market conditions.

Our risk appetite framework outlines the quantitative limits and qualitative goals that define the level and type of risk we are willing to undertake in the course of executing our business strategy, and also serves as a guide in setting risk limits across our business units. It further defines responsibilities for measuring and monitoring risk against limits, and for reporting, escalating, approving and addressing exceptions. Our risk appetite framework is established by ERM, a corporate risk oversight group, in conjunction with the MRAC and the RC of the Board. The Board formally reviews and approves our risk appetite statement annually, or more frequently in response to shifts in endogenous or exogenous risk conditions.

Governance and Structure

Our approach to risk management involves all levels of management, from the Board and its committees, including its Examining and Audit Committee (E&A Committee), the RC, the Human Resources Committee (HRC) and the TOPS, to each business unit and employee. We allocate responsibility for risk oversight so that risk/return decisions are made at an appropriate level, and are subject to robust and effective review and challenge.

Risk management is the responsibility of each employee, and is implemented through three lines of defense:

- The business units, which own and manage the risks inherent in their business, are considered the first line of defense;
- ERM and other support functions, such as Compliance, Finance and Vendor Management, provide the second line of defense; and
- Corporate Audit is the third line of defense, reports to the E&A committee of the Board and is independent from the business units, ERM and other corporate functions. Corporate Audit provides independent assurance to the Board over the design and operating effectiveness of key internal controls included within the risk management framework.

The responsibilities for effective review and challenge reside with senior managers, management oversight committees, Corporate Audit and, ultimately, the Board and its committees.

Corporate-level risk committees provide focused oversight, and establish corporate standards and policies for specific risks, including credit, sovereign exposure, market, liquidity, operational, information technology as well as new business products, regulatory compliance and ethics, vendor risk and model risks. These committees have been delegated the responsibility to develop recommendations and remediation strategies to address issues that affect or have the potential to affect us.

We maintain a risk governance committee structure which serves as the formal governance mechanism through which we seek to undertake the consistent identification, management and mitigation of various risks facing us in connection with our business activities. This governance structure is enhanced and integrated through multi-disciplinary involvement, particularly through ERM. The following chart presents this structure.

While our risk management program is designed to manage the risks in our businesses, internal and external factors may create risks that cannot always be identified or anticipated.

Management Risk Governance Committee Structure

Executive Management Committees:

- Management Risk and Capital Committee (MRAC)
- Business Conduct Committee (BCC)
- Technology and Operational Risk Committee (TORC)

Risk Committees:

- Asset-Liability Committee (ALCO)
- Recovery and Resolution Planning (RRP) Executive Review Board
- CCAR Steering Committee
- Country Risk Committee
- Regulatory Reporting Oversight Committee
- Credit and Market Risk Committee (CMRC)
- Basel Oversight Committee (BOC)
- Model Risk Committee (MRC)
- SSGA Risk Committee
- Fiduciary Review Committee
- New Business and Product Committee
- Core Compliance and Ethics Committee
- Legal Entity Oversight Committee
- Conduct Standards Committee
- Operational Risk and Controls Committee
- Global Third Party and Outsourcing Risk Committee
- Executive Operations Management Committee
- Technology Risk Committee
- Enterprise Continuity Steering Committee
- Enterprise Data Management Committee

Enterprise Risk Management

The goal of ERM is to ensure that risks are proactively identified, well-understood and prudently managed in support of our business strategy. ERM provides risk oversight, support and coordination to allow for the consistent identification, measurement and management of risks across business units separate from the business units' activities, and is responsible for the formulation and maintenance of corporate-wide risk management policies and guidelines. In addition, ERM establishes and reviews limits and, in collaboration with business unit management, monitors key risks. Ultimately, ERM works to validate that risk-taking occurs within the risk appetite statement approved by the Board and conforms to associated risk policies, limits and guidelines.

The Chief Risk Officer (CRO) is responsible for our risk management globally, leads ERM and has a dual reporting line to our CEO and the Board's RC. ERM manages its responsibilities globally through a three-dimensional organization structure:

- "Vertical" business unit-aligned risk groups that support business managers with risk management, measurement and monitoring activities;
- "Horizontal" risk groups that monitor the risks that cross all of our business units (for example, credit and operational risk); and
- Risk oversight for international activities, which combines intersecting "Verticals" and "Horizontals" through a hub and spoke model to provide important regional and legal entity perspectives to the global risk framework.

Sitting on top of this three-dimensional organization structure is a centralized group responsible for the aggregation of risk exposures across the vertical, horizontal and regional dimensions, for consolidated reporting, for setting the corporate-level risk appetite framework and associated limits and policies, and for dynamic risk assessment across our business.

Board Committees

The Board has four committees which assist it in discharging its responsibilities with respect to risk management: the RC, the E&A Committee, the HRC and the TOPS.

- The RC is responsible for oversight related to the operation of our global risk management framework, including policies and procedures establishing risk management governance and processes and risk control infrastructure. It is responsible for reviewing and discussing with management our assessment and management of all risks applicable to our operations, including credit, market, interest rate, liquidity, operational, regulatory, technology, business, compliance and reputation risks, and related policies. In addition, the RC provides oversight of capital policies, capital planning and balance sheet management, resolution planning and monitors capital adequacy in relation to risk. It is also responsible for discharging the duties and obligations of the Board under applicable Basel and other regulatory requirements.
- The E&A Committee oversees management's operation of our comprehensive system of internal controls covering the integrity of our consolidated financial statements and reports, compliance with laws, regulations and corporate policies. The E&A Committee acts on behalf of the Board in monitoring and overseeing the performance of Corporate Audit and in reviewing certain communications with banking regulators. The E&A Committee has direct responsibility for the appointment, compensation, retention, evaluation and oversight of the work of our independent registered public accounting firm, including sole authority for the establishment of pre-approval policies and procedures for all audit engagements and any non-audit engagements.
- The HRC has direct responsibility for the oversight of human capital management, all compensation plans, policies and programs in which executive officers participate and incentive, retirement, welfare as well as equity plans in which certain of our other employees participate. In addition, it oversees the alignment of our incentive compensation arrangements with our safety and soundness, including the integration of risk management objectives, and related policies, arrangements and control processes consistent with applicable related regulatory rules and guidance.
- The TOPS leads and assists in the Board's oversight of technology and operational risk management and the role of these risks in executing our strategy and supporting our global business requirements. The TOPS reviews strategic initiatives from a technology and operational risk perspective and reviews and approves technology-related risk matters. In addition, the TOPS reviews matters related to corporate information security and cybersecurity programs, operational and technology resiliency, data

and access management and third-party risk management.

Executive Management Committees

MRAC is the senior management decision-making body for risk and capital issues, and oversees our financial risks, our consolidated statement of condition, and our capital adequacy, liquidity and recovery and resolution planning. Its responsibilities include:

- The approval of our global risk policies, capital and liquidity management frameworks, including our risk appetite framework;
- The monitoring and assessment of our capital adequacy based on internal policies and regulatory requirements;
- The oversight of our firm-wide risk identification, model risk governance, stress testing and Recovery and Resolution Plan programs; and
- The ongoing monitoring and review of risks undertaken within the businesses, and our senior management oversight and approval of risk strategies and tactics.

MRAC is co-chaired by our CRO and Chief Financial Officer, who regularly present to the RC on developments in the risk environment and performance trends in our key business areas.

BCC provides oversight of our business conduct and culture risks and standards, our commitments to clients and others with whom we do business, and our potential reputational risks, on an enterprise-wide basis. Management considers adherence to high ethical standards to be critical to the success of our business and to our reputation. The BCC is co-chaired by our Chief Compliance Officer and our General Counsel.

TORC provides oversight of, and assesses the effectiveness of, corporate-wide technology and operational risk management programs, and reviews areas of improvement to manage and control technology and operational risk consistently across the organization. TORC is co-chaired by the Chief Operating Officer and the CRO.

Risk Committees

The following second line risk committees, under the oversight of the respective executive management committees, have focused responsibilities for oversight of specific areas of risk management:

Management Risk and Capital Committee

- **ALCO** is the senior corporate oversight and decision-making body for balance sheet strategy, Global Treasury business activities and risk management for interest rate risk, liquidity risk and non-trading market risk. ALCO's roles and responsibilities are designed to be complementary to, and in coordination with the MRAC, which approves the corporate risk appetite and associated balance sheet strategy;
- **CMRC** is the independent risk oversight and decision-making body for our credit, counterparty, and trading-related activities. It is responsible, as part of the second line of defense within ERM, for overseeing alignment of these activities with our appetite for risk and prevailing policy and guidelines. This committee also serves as a forum to discuss, address, and escalate material risk issues;
- **BOC** provides oversight and governance over Basel related regulatory requirements, assesses compliance with respect to Basel regulations and approves all material methodologies and changes, policies and reporting;
- **RRP Executive Review Board** oversees the development of recovery and resolution plans as required by banking regulators;
- **MRC** monitors the overall level of model risk and provides oversight of the model governance process pertaining to all models, including the validation of key models and the ongoing monitoring of model performance. The MRC may also, as appropriate, mandate remedial actions and compensating controls to be applied to models to address modeling deficiencies as well as other issues identified;
- **CCAR Steering Committee** provides primary supervision of the stress tests performed in conformity with the Federal Reserve's CCAR process and the Dodd-Frank Act, and is responsible for the overall management, review, and approval of all material assumptions, methodologies, and results of each stress scenario;
- **State Street Global Advisors Risk Committee** is the most senior oversight and decision making committee for risk management within State Street Global Advisors; the committee is responsible for overseeing the alignment of State Street Global Advisors' strategy, and risk appetite, as well as alignment with our corporate-wide strategy and risk management standards;
- **Country Risk Committee** oversees the identification, assessment, monitoring, reporting and mitigation, where necessary, of country risks; and

- **Regulatory Reporting Oversight Committee** is responsible for providing oversight of regulatory reporting and related report governance processes and accountabilities.

Business Conduct Committee

- **Fiduciary Review Committee** reviews and assesses the fiduciary risk management programs of those units in which we serve in a fiduciary capacity;
- **New Business and Product Committee** provides oversight of the evaluation of the risk inherent in proposed new products or services and new business, and extensions of existing products or services, evaluations including economic justification, material risk, compliance, regulatory and legal considerations, and capital and liquidity analyses;
- **Core Compliance and Ethics Committee** provides review and oversight of our compliance programs, including our culture of compliance and high standards of ethical behavior;
- **Legal Entity Oversight Committee** establishes standards with respect to the governance of our legal entities, monitors adherence to those standards, and oversees the ongoing evaluation of our legal entity structure, including the formation, maintenance and dissolution of legal entities; and
- **The Conduct Standards Committee** provides oversight of our enforcement of employee conduct standards.

Technology and Operational Risk Committee

- **Operational Risk and Controls Committee** along with the support of regional business or entity-specific working groups and committees, is responsible for oversight of our operational risk programs, including determining that the implementation of those programs is designed to identify, manage and control operational risk in an effective and consistent manner across the firm;
- **Technology Risk Committee** is responsible for the global oversight, review and monitoring of operational, legal and regulatory compliance and reputational risk that may result in a significant change to our Information Technology risk profile or a material financial loss or reputational impact to global technology services. The Committee serves as a forum to provide regular reporting to TORC and escalate technology risk and control issues to TORC, as appropriate;
- **Enterprise Continuity Steering Committee** considers matters pertaining to continuity and related risks, including oversight in determining the direction of the continuity program;
- **Global Third Party and Outsourcing Risk Committee** is responsible for overseeing our framework and processes for the identification, assessment, and ongoing management of third party and outsourcing-related risks. This committee is also a decision-making body for outsourcing strategy, third party risk acceptance, and the end-to-end third party management process, including the oversight of appropriate controls and risk mitigants that comply with applicable regulatory standards;
- **Executive Operations Management Committee** is a forum for the development of strategy, decision-making, and escalation for operations, regulatory remediation, product management, technology, and the operating model; and
- **Enterprise Data Management Committee** oversees the enterprise-wide data management strategy, provides independent oversight of the programs associated with enterprise-wide data management, serves as an escalation point for material and emerging enterprise-wide data management issues, and determines / oversees enterprise-wide data management priorities and strategy.

Credit Risk Management

Core Policies and Principles

We define credit risk as the risk of financial loss if a counterparty, borrower or obligor, collectively referred to as a counterparty, is either unable or unwilling to repay borrowings or settle a transaction in accordance with contractual terms. We assume credit risk in our traditional non-trading lending activities, such as overdrafts, loans and contingent commitments, in our investment securities portfolio, where recourse to a counterparty exists, and in our direct and indirect trading activities, such as securities purchased under a resale agreement, principal securities lending and foreign exchange and indemnified agency securities lending. We also assume credit risk in our treasury and securities and other settlement operations, in the form of deposit placements and other cash balances, with central banks or private sector institutions and fee receivables.

We distinguish between three major types of credit risk:

- **Default risk** - the risk that a counterparty fails to meet its contractual payment obligations;
- **Country risk** - the risk that we may suffer a loss, in any given country, due to any of the following reasons: deterioration of economic conditions, political and social upheaval, nationalization and appropriation of assets, government repudiation of indebtedness, exchange controls and disruptive currency depreciation or devaluation; and
- **Settlement risk** - the risk that the settlement or clearance of transactions will fail, which arises whenever the exchange of cash, securities or other assets is not simultaneous.

The acceptance of credit risk by us is governed by corporate policies and guidelines, which include standardized procedures applied across the entire organization. These policies and guidelines include specific requirements related to each counterparty's risk profile; the markets served; counterparty, industry and country concentrations; and regulatory compliance. These policies and procedures also implement a number of core principles, which include the following:

- We measure and consolidate credit risks attributed to each counterparty, or group of counterparties, in accordance with a "one-obligor" principle that aggregates risks across our business units;
- ERM reviews and approves all material extensions of credit, and material changes to such extensions of credit (such as changes in term, collateral structure or covenants), in accordance with assigned credit-approval authorities;
- Credit-approval authorities are assigned to individuals according to their qualifications, experience and training, and these authorities are periodically reviewed. Our largest exposures require approval by the Credit Committee, a sub-committee of the CMRC. With respect to small and low-risk extensions of credit to certain types of counterparties, approval authority may be granted to individuals outside of ERM;
- We seek to avoid or limit undue concentrations of risk. Counterparty (or groups of counterparties), industry, country and product-specific concentrations of risk are subject to frequent review and approval in accordance with our risk policies and appetite;
- We evaluate the creditworthiness of counterparties through a detailed risk assessment, including the use of internal risk-rating methodologies;
- We review all extensions of credit and the creditworthiness of counterparties at least annually. The nature and extent of these reviews are determined by the size, nature and term of the extensions of credit and the creditworthiness of the counterparty; and
- We subject all corporate policies and guidelines to annual review as an integral part of our periodic assessment of our risk appetite.

Our corporate policies and guidelines require that all extensions of credit are consistent with the bank's standards, limit credit-related losses, and our goal of maintaining a strong financial condition.

Structure and Organization

The Credit and Global Markets Risk group within ERM is responsible for the assessment, approval and monitoring of credit risk across our business. The group is managed centrally, has dedicated teams in a number of locations worldwide, and is responsible for related policies and procedures, and for our internal credit-rating systems and methodologies. In addition, the group, in conjunction with the business units, establishes measurements and limits to control the amount of credit risk accepted across its various business activities, both at the portfolio level and for each individual counterparty or group of counterparties, to individual sectors, and also to counterparties by product and country of risk. These measurements and limits are reviewed periodically, but at least annually.

In conjunction with other groups in ERM, the Credit and Global Markets Risk group is jointly responsible for the design, implementation and oversight of our credit risk measurement and management systems, including data and assessment systems, quantification systems and the reporting framework.

Various key committees within our company are responsible for the oversight of credit risk and associated credit risk policies, systems and models. All credit-related activities are governed by our risk appetite framework and our credit risk guidelines, which define our general philosophy with respect to credit risk and the manner in which we control, manage and monitor such risks.

The previously described CMRC (refer to "Risk Committees") has primary responsibility for the oversight, review and approval of the credit risk guidelines and policies. Credit risk guidelines and

policies are reviewed periodically, but at least annually.

The Credit Committee, a sub-committee of the CMRC, has responsibility for assigning credit authority and approving the largest and higher-risk extensions of credit to individual counterparties or groups of counterparties.

CMRC provides periodic updates to MRAC and the Board's RC.

Credit Ratings

We perform initial and ongoing reviews to exercise due diligence on the creditworthiness of our counterparties when conducting any business with them or approving any credit limits.

This due diligence process generally includes the assignment of an internal credit rating, which is determined by the use of internally developed and validated methodologies, scorecards and a 15-grade rating scale. This risk-rating process incorporates the use of risk-rating tools in conjunction with management judgment; qualitative and quantitative inputs are captured in a replicable manner and, following a formal review and approval process, an internal credit rating based on our rating scale is assigned. We generally rate our counterparties individually, although some counterparties defined by us as low-risk are rated on a pooled basis. Credit ratings are reviewed and approved by the Credit and Global Markets Risk group or its delegates. We evaluate and rate the credit risk of our counterparties on an ongoing basis. To facilitate comparability across the portfolio, counterparties within a given sector are rated using a risk-rating tool developed for that sector.

Our risk-rating methodologies are approved for use by the Portfolio Risk Committee, a subcommittee of the CMRC, after completion of internal model validation processes, and are subject to an annual review, including re-validation.

Risk Parameter Estimates

Our internal risk-rating system promotes a clear and consistent approach to determining appropriate credit risk classifications for our credit counterparties and exposures. This allows us to track the changes in risk associated with these counterparties and exposures over time. This capability enhances our ability to calculate both risk exposures and capital, and enables better strategic decision making across the organization.

More specifically, our internal risk rating system is used for the following purposes:

- The assessment of the creditworthiness of new counterparties and, in conjunction with our risk appetite statement, the development of appropriate credit limits for our products and services, including loans, foreign exchange, securities finance, placements and repurchase agreements;
- The automation of limit approvals for certain low-risk counterparties, as defined in our credit risk guidelines and based on the counterparty's probability-of-default;
- The development of approval authority matrices based on PD; riskier counterparties with higher PDs require higher levels of approval for a comparable PD and limit size compared to less risky counterparties with lower PDs;
- The analysis of risk concentration trends using historical PD and exposure-at-default (EAD), data;
- The determination of the level of management review of short-duration advances depending on PD; riskier counterparties with higher rating class values generally trigger higher levels of management escalation for comparable short-duration advances compared to less risky counterparties with lower rating-class values;
- The monitoring of credit facility utilization levels using EAD values and the identification of instances where counterparties have exceeded limits;
- The aggregation and comparison of counterparty exposures with risk appetite levels to determine if businesses are maintaining appropriate risk levels; and
- The determination of our regulatory capital requirements for the AIRB set forth in the Basel framework.

Credit Risk Mitigation

We seek to limit our credit exposure and reduce any potential credit losses through the use of various types of credit risk mitigation. The Basel III final rule permits us to reflect the application of credit risk mitigation when it meets the standards outlined therein. Examples of forms of credit risk mitigation include a security interest in financial and non financial assets (collateral), netting and guarantees. Where permissible, we apply the recognition of collateral, guarantees and netting to mitigate overall risk within our counterparty credit portfolio. While credit default swaps are permitted under the Basel III final rule, we do not actively use credit default swaps as a risk mitigation tool.

Collateral

In many parts of our business, we regularly require or agree for collateral to be received from or provided to clients and counterparties in connection with contracts that involve credit risk. In our trading businesses, this collateral is typically in the form of cash, as well as highly-rated and/or liquid securities (i.e. government securities and other bonds or equity securities). Credit risks in our non-trading and securities finance businesses are also often secured by bonds and equity securities and by other types of assets. Collateral serves to reduce the risk of loss inherent in an exposure. However, changing market values of the collateral we hold, unexpected increases in the credit exposure to a client or counterparty, reductions in the value or change in the type of securities held by us, as well as operational errors or errors in the manner in which we seek to exercise our rights, may reduce the risk mitigation effects of collateral. While collateral is often an alternative source of repayment, it does not replace the requirement within our policies and guidelines for high-quality underwriting. We also may choose to incur credit exposure without the benefit of collateral or other risk mitigating credits rights.

Our credit risk guidelines require that the collateral we accept for risk mitigation purposes is of high quality, can be reliably valued and is supported by a valid security interest that permits liquidation if or when required. Generally, when collateral is of lower quality, more difficult to value or more challenging to liquidate, higher discounts to market values are applied for the purposes of measuring credit risk. For certain less liquid collateral, longer liquidation periods are assumed when determining the credit exposure.

All types of collateral are assessed regularly by ERM, as is the basis on which the collateral is valued. Our assessment of collateral, including the ability to liquidate collateral in the event of a counterparty default, and also with regard to market values of collateral under a variety of hypothetical market conditions, is an integral component of our assessment of risk and approval of credit limits. We also seek to identify, limit and monitor instances of "wrong-way" risk, where a counterparty's risk of default is positively correlated with the risk of our collateral eroding in value.

We maintain policies and procedures requiring that documentation used to collateralize a transaction is legal, valid, binding and enforceable in the relevant jurisdictions. We also conduct legal reviews to assess whether our documentation meets these standards on an ongoing basis.

Netting

Netting is a mechanism that allows institutions and counterparties to net offsetting exposures and payment obligations against one another through the use of qualifying master netting agreements. A master netting agreement allows for certain rights and remedies upon a counterparty default, including the right to net obligations arising under derivatives or other transactions under such agreement. In such an event, the netting of obligations would result in a single net claim owed by, or to, the counterparty. This is commonly referred to as "close-out netting," and is pursued wherever possible. We may also enter into master agreements that allow for the netting of amounts payable on a given day and in the same currency, reducing our settlement risk. This is commonly referred to as "payment netting," and is widely used in our foreign exchange activities.

As with collateral, we have policies and procedures in place to apply close-out and payment netting only to the extent that we have verified legal validity and enforceability of the master agreement. In the case of payment netting, operational constraints may preclude us from reducing settlement risk, notwithstanding the legal right to require the same under the master netting agreement. In the event we become unable, due to operational constraints, actions by regulators, changes in accounting principles, law or regulation (or related interpretations) or other factors, to net some or all of our offsetting exposures and payment obligations under those agreements, we would be required to gross up our assets and liabilities on our statement of condition and our calculation of RWA, accordingly. This would result in a potentially material change in our regulatory ratios, including LCR, and present increased credit, liquidity, asset-and-liability management and operational risks, some of which could be material.

Guarantees

A guarantee is a financial instrument that results in credit support being provided by a third party, (i.e., the protection provider) to the underlying obligor (the beneficiary of the provided protection) on account of an exposure owing by the obligor. The protection provider may support the underlying exposure either in whole or in part. Support of this kind may take different forms. Typical forms of guarantees provided to us include financial guarantees, letters of credit, bankers' acceptances, purchase undertaking agreement contracts and insurance.

We have established a review process to evaluate guarantees under the applicable requirements of our policies and Basel III requirements. Governance for this evaluation is covered under policies and procedures that require regular reviews of documentation, jurisdictions and credit quality of protection providers.

Credit Limits

Central to our philosophy for our management of credit risk is the approval and imposition of credit limits, against which we monitor the actual and potential future credit exposure arising from our business activities with counterparties or groups of counterparties. Credit limits are a reflection of our risk appetite, which may be determined by the creditworthiness of the counterparty, the nature of the risk inherent in the business undertaken with the counterparty, or a combination of relevant credit factors. Our risk appetite for certain sectors and certain countries and geographic regions may also influence the level of risk we are willing to assume to certain counterparties.

The analysis and approval of credit limits is undertaken similarly across our businesses, although the nature and extent of the analysis may vary, based on the type, term and magnitude of the risk being assumed. Credit limits and underlying exposures are assessed and measured on both a gross and net basis where appropriate, with net exposure determined by deducting the value of any collateral held. For certain types of risk being assumed, we will also assess and measure exposures under a variety of hypothetical market conditions. Credit limit approvals across our business are undertaken by the Credit and Global Markets Risk group, by individuals to whom credit authority has been delegated, or by the Credit Committee.

Credit limits are re-evaluated annually, or more frequently as needed, and are revised periodically on prevailing and anticipated market conditions, changes in counterparty or country-specific credit ratings and outlook, changes in our risk appetite for certain counterparties, sectors or countries, and enhancements to the measurement of credit utilization.

Reporting

Ongoing active monitoring and management of our credit risk is an integral part of our credit risk management framework. We maintain management information systems to identify, measure, monitor and report credit risk across businesses and legal entities, enabling ERM and our businesses to have timely access to information on credit limits and exposures. Monitoring is performed along the dimensions of counterparty, industry, country and product-specific risks to facilitate the identification of concentrations of risk and emerging trends.

Key aspects of this credit risk reporting structure include governance and oversight groups and policies that define standards for the reporting of credit risk, data aggregation and sourcing systems.

The Credit and Global Markets Risk group routinely assesses the composition of our overall credit risk portfolio for alignment with our stated risk appetite. This assessment includes routine analysis and reporting of the portfolio, monitoring of market-based indicators, the assessment of industry trends and developments and regular reviews of concentrated risks. The Credit and Global Markets Risk group is also responsible, in conjunction with the business units, for defining the appetite for credit risk in the major sectors in which we have a concentration of business activities. These sector-level risk appetite statements, which include counterparty selection criteria and granular underwriting guidelines, are reviewed periodically and approved by the CMRC.

Monitoring

Regular surveillance of credit and counterparty risks is undertaken by our business units, the Credit and Global Markets Risk group and designees with ERM, allowing for oversight. This surveillance process includes, but is not limited to, the following components:

- Annual Reviews. A formal review of counterparties is conducted at least annually and includes a review of operating performance, primary risk factors and our internal credit risk rating. This annual review also includes a review of current and proposed credit limits, an assessment of our ongoing risk appetite and assessment that supporting legal documentation remains effective.
- Interim Monitoring. Monitoring of our largest and riskiest counterparties is undertaken more frequently, utilizing financial information, market indicators and other relevant credit and performance measures. The nature and extent of this interim monitoring is individually tailored to certain counterparties and/or industry sectors to identify material changes to the risk profile of a counterparty (or group of counterparties) and assign an updated internal risk rating in a timely manner.

We maintain an active "watch list" for all counterparties. The watch list status denotes a concern with some aspect of a counterparty's risk profile that warrants closer monitoring of the counterparty's financial performance and related risk factors. Our ongoing monitoring processes are designed to facilitate the early identification of counterparties whose creditworthiness is deteriorating; any counterparty may be placed on the watch list by ERM at its sole discretion.

Counterparties on the watch list generally correspond with the non-investment grade or near non-investment grade ratings established by the major independent credit-rating agencies. The watch

list also includes any counterparties rated "Special Mention," "Substandard," "Doubtful" and "Loss."

The Credit and Global Markets Risk group maintains primary responsibility for our watch list processes, and generates a quarterly report of all watch list counterparties. The watch list is formally reviewed at least on a quarterly basis, with participation from senior ERM staff, and representatives from the business units and our corporate finance and legal groups as appropriate. These meetings include a review of individual watch list counterparties, together with credit limits and prevailing exposures, and are focused on actions to contain, reduce or eliminate the risk of loss to us. Identified actions are documented and monitored.

Controls

GCR provides a separate level of surveillance and oversight over the integrity of our credit risk management processes, including the internal risk-rating system. GCR reviews counterparty credit ratings for all identified sectors on an ongoing basis. GCR is subject to oversight by the CMRC, and provides periodic updates to the Board's RC.

Specific activities of GCR include the following:

- Perform separate and objective assessments of our credit and counterparty exposures to determine the nature and extent of risk undertaken by the business units;
- Execute periodic credit process and credit product reviews to assess the quality of credit analysis, compliance with policies, guidelines and relevant regulation, transaction structures and underwriting standards, and risk-rating integrity;
- Identify and monitor developing counterparty, market and/or industry sector trends to limit risk of loss and protect capital;
- Deliver regular and formal reporting to stakeholders, including exam results, identified issues and the status of requisite actions to remedy identified deficiencies;
- Allocate resources for specialized risk assessments (on an as-needed basis); and
- Liaise with assurance partners and regulatory personnel on matters relating to risk rating, reporting and measurement.

Allowance for Credit Losses

We record an allowance for credit losses related to certain on-balance sheet credit exposures, including our financial assets held at amortized cost, as well as certain off-balance sheet credit exposures, including unfunded commitments and letters of credit. Review and evaluation of the adequacy of the allowance for credit losses is ongoing throughout the year, but occurs at least quarterly, and is based, among other factors, on our evaluation of the level of risk in the portfolio and the estimated effects of our forecasts on our counterparties. We utilize multiple economic scenarios, consisting of a baseline, upside and downside scenarios, to develop our forecast of expected losses.

In 2022, the allowance estimate reflected a downward shift in our economic outlook, which was partially offset by a reduction in loan portfolio risk. Allowance estimates are subject to uncertainties, including those inherent in our model and economic assumptions, and management may use qualitative adjustments. If future data and forecasts deviate relative to the forecasts utilized to determine our allowance for credit losses as of December 31, 2022, or if credit risk migration is higher or lower than forecasted for reasons independent of the economic forecast, our allowance for credit losses will also change.

Additional information about the allowance for credit losses is provided in Note 4 to the consolidated financial statements in this Form 10-K.

Liquidity Risk Management

Our liquidity framework contemplates areas of potential risk to our liquidity based on our activities, size and other appropriate risk-related factors. In managing liquidity risk we employ limits, maintain established metrics and early warning indicators and perform routine stress testing to identify potential liquidity needs. This process involves the evaluation of a combination of internal and external scenarios which assist us in measuring our liquidity position and in identifying potential increases in cash needs or decreases in available sources of cash, as well as the potential impairment of our ability to access the global capital markets.

We manage our liquidity on a global, consolidated basis as well as on a stand-alone basis at our Parent Company and at certain branches and subsidiaries of State Street Bank. State Street Bank generally has access to markets and funding sources limited to banks, such as the federal funds market and the Federal Reserve's discount window. The Parent Company is managed to a more conservative liquidity profile, reflecting narrower market access. Additionally, the Parent Company typically holds, or has direct access to, primarily through SSIF, a direct subsidiary of the Parent Company, and the support agreement, as discussed in "Supervision and Regulation" in Business in this Form 10-K, cash and equivalents intended to meet its current debt maturities and other cash needs, as well as those projected over the next twelve-month period. Absent financial distress at the Parent Company, the liquid assets available at SSIF continue to be available to

the Parent Company. As of December 31, 2022, the value of our Parent Company's net liquid assets totaled $460 million, compared with $482 million as of December 31, 2021, excluding available liquidity through SSIF. As of December 31, 2022, our Parent Company and State Street Bank had approximately $1.99 billion of senior notes or subordinated debentures outstanding that will mature in the next twelve months.

As a SIFI, our liquidity risk management activities are subject to heightened and evolving regulatory requirements, including interpretations of those requirements, under specific U.S. and international regulations and also resulting from published and unpublished guidance, supervisory activities, such as stress tests, resolution planning, examinations and other regulatory interactions. Satisfaction of these requirements could, in some cases, result in changes in the composition of our investment portfolio, reduced NII or NIM, a reduction in the level of certain business activities or modifications to the way in which we deliver our products and services. If we fail to meet regulatory requirements to the satisfaction of our regulators, we could receive negative regulatory stress test results, incur a resolution plan deficiency or determination of a non-credible resolution plan or otherwise receive an adverse regulatory finding. Our efforts to satisfy, or our failure to satisfy, these regulatory requirements could materially adversely affect our business, financial condition or results of operations.

Governance

Global Treasury is responsible for our management of liquidity. This includes the day-to-day management of our global liquidity position, the development and monitoring of early warning indicators, key liquidity risk metrics, the creation and execution of stress tests, the evaluation and implementation of regulatory requirements, the maintenance and execution of our liquidity guidelines and contingency funding plan (CFP), and routine management reporting to ALCO, MRAC and the Board's RC.

Global Treasury Risk Management, part of ERM, provides separate oversight over the identification, communication and management of Global Treasury's risks in support of our business strategy. Global Treasury Risk Management reports to the CRO. Global Treasury Risk Management's responsibilities relative to liquidity risk management include the development and review of policies and guidelines; the monitoring of limits related to adherence to the liquidity risk guidelines and associated reporting.

Liquidity Framework

We manage liquidity according to several principles that are equally important to our overall liquidity risk management framework:

- **Structural liquidity management** addresses liquidity by monitoring and directing the composition of our consolidated statement of condition. Structural liquidity is measured by metrics such as the percentage of total wholesale funds to consolidated total assets, and the percentage of non-government investment securities to client deposits. In addition, on a regular basis and as described below, our structural liquidity is evaluated under various stress scenarios.
- **Tactical liquidity management** addresses our day-to-day funding requirements and is largely driven by changes in our primary source of funding, which are client deposits. Fluctuations in client deposits may be supplemented with short-term borrowings, repurchase agreements, FHLB products and certificates of deposit.
- **Stress testing and contingent funding planning** are longer-term strategic liquidity risk management practices. Regular and ad hoc liquidity stress testing are performed under various severe but plausible scenarios at the consolidated level and at significant subsidiaries, including State Street Bank. These tests contemplate severe market and events specific to us under various time horizons and severities. Tests contemplate the impact of material changes in key funding sources, credit ratings, additional collateral requirements, contingent uses of funding, systemic shocks to the financial markets and operational failures based on market and assumptions specific to us. The stress tests evaluate the required level of funding versus available sources in an adverse environment. As stress testing contemplates potential forward-looking scenarios, results also serve as a trigger to activate specific liquidity stress levels and contingent funding actions.

CFPs are designed to assist senior management with decision-making associated with any contingency funding response to a possible or actual crisis scenario. The CFPs define roles, responsibilities and management actions to be taken in the event of deterioration of our liquidity profile caused by either an event specific to us or a broader disruption in the capital markets. Specific actions are linked to the level of stress indicated by these measures or by management judgment of market conditions.

Liquidity Risk Metrics

In managing our liquidity, we employ early warning indicators and metrics intended to detect situations which may result in a liquidity stress, including changes in our stock price and spreads on our long-term debt. Additional metrics that are critical to the management of our consolidated statement of condition and monitored as part of our routine liquidity management include measures of our fungible cash position, purchased wholesale funds, unencumbered liquid assets, deposits and the total of investment securities and loans as a percentage of total client deposits.

Asset Liquidity

Central to the management of our liquidity is asset liquidity, which consists primarily of HQLA. HQLA is the amount of liquid assets that qualify for inclusion in the LCR. As a banking organization, we are subject to a minimum LCR under the LCR rule approved by U.S. banking regulators. The LCR is intended to promote the short-term resilience of internationally active banking organizations, like us, to improve the banking industry's ability to absorb shocks arising from market stress over a 30 calendar day period and improve the measurement and management of liquidity risk. The LCR measures an institution's HQLA against its net cash outflows. HQLA primarily consists of unencumbered cash and certain high quality liquid securities that qualify for inclusion under the LCR rule. We report LCR to the Federal Reserve daily. For the quarters ended December 31, 2022 and 2021, daily average LCR for the Parent Company was 106% and 105%, respectively. The impact of higher deposits on the Parent Company's LCR is offset by a cap, known as the transferability restriction, on the HQLA from State Street Bank and Trust that can be recognized at the Parent Company as defined in the U.S. LCR Final Rule as it prohibits the upstreaming of liquidity under stress. The average HQLA, post-prescribed haircuts for the Parent Company under the LCR final rule definition was $139.88 billion and $159.36 billion for the quarters ended December 31, 2022 and 2021, respectively. The decrease in average HQLA for the quarter ended December 31, 2022, compared to the quarter ended December 31, 2021, was primarily driven by a decrease in client deposits. For the quarter ended December 31, 2022, LCR for State Street Bank and Trust was approximately 122%. State Street Bank and Trust's LCR is higher than the Parent Company's LCR, primarily due to application of the transferability restriction in the LCR final rule to the calculation of the Parent Company's LCR. This restriction limits the HQLA used in the calculation of the Parent Company's LCR to the amount of net cash outflows of its principal banking subsidiary (State Street Bank and Trust). This transferability restriction does not apply in the calculation of State Street Bank and Trust's LCR, and therefore State Street Bank and Trust's LCR reflects the benefit of all of its HQLA holdings.

We maintained average cash balances in excess of regulatory requirements governing deposits with the Federal Reserve of approximately $79.52 billion at the Federal Reserve, the ECB and other non-U.S. central banks for the quarter ended December 31, 2022, and $83.48 billion for the quarter ended December 31, 2021. The higher levels of average cash balances with central banks reflect higher levels of client deposits.

Liquid securities carried in our asset liquidity include securities pledged without corresponding advances from the Federal Reserve Bank of Boston (FRBB), the FHLB, and other non-U.S. central banks. State Street Bank is a member of the FHLB. This membership allows for advances of liquidity in varying terms against high-quality collateral, which helps facilitate asset-and-liability management. As of December 31, 2022 and 2021, we had no outstanding borrowings from the FHLB.

Access to primary, intra-day and contingent liquidity provided by these utilities is an important source of contingent liquidity with utilization subject to underlying conditions. As of December 31, 2022 and 2021, we had no outstanding primary credit borrowings from the FRBB discount window or any other central bank facility.

In addition to the securities included in our asset liquidity, we have other unencumbered investment securities. These securities are available sources of liquidity, although not as rapidly deployed as those included in our asset liquidity.

The average fair value of total unencumbered securities was $78.25 billion for the quarter ended December 31, 2022, compared to $99.47 billion for the quarter ended December 31, 2021.

Measures of liquidity include LCR and NSFR, which are described in "Supervision and Regulation" in Business in this Form 10-K.

Uses of Liquidity

Significant uses of our liquidity could result from the following: withdrawals of client deposits; draw-downs by our custody clients of lines of credit; advances to clients to settle securities transactions; increases in our investment and loan portfolios; or other permitted purposes. Such circumstances would generally arise under stress conditions including deterioration in credit ratings. A recurring use of our liquidity involves our deployment of HQLA from our investment portfolio to post collateral to financial institutions serving as sources of securities under our enhanced custody program.

We had unfunded commitments to extend credit with gross contractual amounts totaling $31.20 billion

and $33.03 billion and standby letters of credit totaling $2.13 billion and $3.24 billion as of December 31, 2022 and 2021, respectively. These amounts do not reflect the value of any collateral. As of December 31, 2022, approximately 77% of our unfunded commitments to extend credit and 22% of our standby letters of credit expire within one year. Since many of our commitments are expected to expire or renew without being drawn upon, the gross contractual amounts do not necessarily represent our future cash requirements.

Information about our resolution planning and the impact actions under our resolution plans could have on our liquidity is provided in "Supervision and Regulation" in Business in this Form 10-K.

Funding

Deposits

We provide products and services including custody, accounting, administration, daily pricing, FX services, cash management, financial asset management, securities finance and investment advisory services. As a provider of these products and services, we generate client deposits, which have generally provided a stable, low-cost source of funds. As a global custodian, clients place deposits with our entities in various currencies. As of both December 31, 2022 and 2021, approximately 65% of our average total deposit balances were denominated in U.S. dollars, 15% in EUR, 10% in GBP and 10% in all other currencies.

Short-Term Funding

Our on-balance sheet liquid assets are also an integral component of our liquidity management strategy. These assets provide liquidity through maturities of the assets, but more importantly, they provide us with the ability to raise funds by pledging the securities as collateral for borrowings or through outright sales. In addition, our access to the global capital markets gives us the ability to source incremental funding from wholesale investors. As discussed earlier under "Asset Liquidity," State Street Bank's membership in the FHLB allows for advances of liquidity with varying terms against high-quality collateral.

Short-term secured funding also comes in the form of securities lent or sold under agreements to repurchase. These transactions are short-term in nature, generally overnight and are collateralized by high-quality investment securities. These balances were $1.18 billion and $1.58 billion as of December 31, 2022 and 2021, respectively.

State Street Bank currently maintains a line of credit with a financial institution of CAD $1.40 billion, or approximately $1.03 billion, as of December 31, 2022, to support its Canadian securities processing operations. The line of credit has no stated termination date and is cancelable by either party with prior notice. As of both December 31, 2022 and 2021, there was no balance outstanding on this line of credit.

Long-Term Funding

We have the ability to issue debt and equity securities under our current universal shelf registration statement to meet current commitments and business needs. In addition, State Street Bank also has current authorization from the Board to issue unsecured senior debt. The total amount remaining for issuance pursuant to this authority is $2.15 billion as of December 31, 2022.

On February 7, 2022, we issued $300 million aggregate principal amount of 1.746% fixed-to-floating rate senior notes due 2026, $650 million aggregate principal amount of 2.203% fixed-to-floating rate senior notes due 2028 and $550 million aggregate principal amount of 2.623% fixed-to-floating rate senior notes due 2033.

On March 30, 2022, we redeemed $750 million aggregate principal amount of 2.825% fixed-to-floating rate senior notes due 2023.

On May 13, 2022, we issued $500 million aggregate principal amount of 4.421% fixed-to-floating rate senior notes due 2033.

On May 15, 2022, we redeemed $750 million aggregate principal amount of 2.653% fixed-to-floating rate senior notes due 2023.

On August 4, 2022, we issued $750 million aggregate principal amount of 4.164% fixed-to-floating rate senior notes due 2033.

On November 4, 2022, we issued $500 million aggregate principal amount of 5.751% fixed-to-floating rate senior notes due 2026 and $500 million aggregate principal amount of 5.820% fixed-to-floating rate senior notes due 2028.

On January 26, 2023, we issued $500 million aggregate principal amount of 4.857% fixed-to-floating rate senior notes due 2026 and $750 million aggregate principal amount of 4.821% fixed-to-floating rate senior notes due 2034.

Agency Credit Ratings

Our ability to maintain consistent access to liquidity is fostered by the maintenance of high investment grade ratings as measured by the major independent credit rating agencies.

TABLE 29: CREDIT RATINGS

	As of December 31, 2022		
	Standard & Poor's	**Moody's Investors Service**	**Fitch**
State Street:			
Senior debt	**A**	**A1**	**AA-**
Subordinated debt	**A-**	**A2**	**A**
Junior subordinated debt	**BBB**	**A3**	**NR**
Preferred stock	**BBB**	**Baa1**	**BBB+**
Outlook	**Stable**	**Stable**	**Stable**
State Street Bank:			
Short-term deposits	**A-1+**	**P-1**	**F1+**
Long-term deposits	**AA-**	**Aa1**	**AA+**
Senior debt/Long-term issuer	**AA-**	**Aa3**	**AA**
Subordinated debt	**A**	**Aa3**	**NR**
Outlook	**Stable**	**Stable**	**Stable**

Factors essential to maintaining high credit ratings include:

- diverse and stable core earnings;
- relative market position;
- strong risk management;
- strong capital ratios;
- diverse liquidity sources, including the global capital markets and client deposits;
- strong liquidity monitoring procedures; and
- preparedness for current or future regulatory developments.

High ratings limit borrowing costs and enhance our liquidity by:

- providing confidence for unsecured funding and depositors;
- increasing the potential market for our debt and improving our ability to offer products;
- facilitating reduced collateral haircuts in secured lending transactions; and
- engaging in transactions in which clients value high credit ratings.

A downgrade or reduction in our credit ratings could have a material adverse effect on our liquidity by restricting our ability to access the capital markets, which could increase the related cost of funds. In turn, this could cause the sudden and large-scale withdrawal of unsecured deposits by our clients, which could lead to drawdowns of unfunded commitments to extend credit or trigger requirements under securities purchase commitments; or require additional collateral or force terminations of certain trading derivative contracts.

A majority of our derivative contracts have been entered into under bilateral agreements with counterparties who may require us to post collateral or terminate the transactions based on changes in our credit ratings. We assess the impact of these arrangements by determining the collateral that would be required assuming a downgrade by the major rating agencies. The additional collateral or termination payments related to our net derivative liabilities under these arrangements that could have been called by counterparties in the event of a downgrade in our credit ratings below levels specified in the agreements is provided in Note 10 to the consolidated financial statements in this Form 10-K. Other funding sources, such as secured financing transactions and other margin requirements, for which there are no explicit triggers, could also be adversely affected.

Contractual Cash Obligations and Other Commitments

The long-term contractual cash obligations included within Table 30: Long-Term Contractual Cash Obligations were recorded in our consolidated statement of condition as of December 31, 2022, except for the interest portions of long-term debt and finance leases.

TABLE 30: LONG-TERM CONTRACTUAL CASH OBLIGATIONS

December 31, 2022	Payments Due by Period				
(In millions)	Less than 1 year	1-3 years	4-5 years	Over 5 years	Total
Long-term debt[1][2]	$ 1,991	$ 3,661	$ 2,607	$ 6,561	$ 14,820
Operating leases	189	232	154	101	676
Finance lease obligations[2]	50	104	31	—	185
Tax liability	10	47	—	—	57
Total contractual cash obligations	$ 2,240	$ 4,044	$ 2,792	$ 6,662	$ 15,738

[1] Long-term debt excludes finance lease obligations (presented as a separate line item) and the effect of interest rate swaps. Interest payments were calculated at the stated rate with the exception of floating-rate debt, for which payments were calculated using the indexed rate in effect as of December 31, 2022.

[2] Additional information about contractual cash obligations related to long-term debt and operating and finance leases is provided in Notes 9 and 20 to the consolidated financial statements in this Form 10-K.

Total contractual cash obligations shown in Table 30: Long-Term Contractual Cash Obligations do not include:

- Obligations which will be settled in cash, primarily in less than one year, such as client deposits, federal funds purchased, securities sold under repurchase agreements and other short-term borrowings. Additional information about deposits, federal funds purchased, securities sold under repurchase agreements and other short-term borrowings is provided in Note 8 to the consolidated financial statements in this Form 10-K.
- Obligations related to derivative instruments because the derivative-related amounts recorded in our consolidated statement of condition as of December 31, 2022 did not represent the amounts that may ultimately be paid under the contracts upon settlement. Additional information about our derivative instruments is provided in Note 10 to the consolidated financial statements in this Form 10-K. We have obligations under pension and other post-retirement benefit plans, with additional information provided in Note 19 to the consolidated financial statements in this Form 10-K, which are not included in Table 30: Long-Term Contractual Cash Obligations.

TABLE 31: OTHER COMMERCIAL COMMITMENTS

	Duration of Commitment as of December 31, 2022				
(In millions)	Less than 1 year	1-3 years	4-5 years	Over 5 years	Total amounts committed[1]
Indemnified securities financing	$ 348,924	$ —	$ —	$ —	$ 348,924
Unfunded credit facilities	21,682	4,170	5,172	184	31,208
Standby letters of credit	467	812	846	—	2,125
Purchase obligations[2]	236	502	297	192	1,227
Total commercial commitments	$ 371,309	$ 5,484	$ 6,315	$ 376	$ 383,484

[1] Total amounts committed reflect participations to independent third parties, if any.

[2] Amounts represent obligations pursuant to legally binding agreements, where we have agreed to purchase products or services with a specific minimum quantity defined at a fixed, minimum or variable price over a specified period of time.

Additional information about the commitments presented in Table 31: Other commercial commitments, except for purchase obligations, is provided in Note 12 to the consolidated financial statements in this Form 10-K.

Operational Risk Management

Overview

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

Tight labor markets, challenging conditions in the global equity and fixed income markets, and heightened geopolitical tensions, including the ongoing war in Ukraine, are resulting in stress on the operating environment and have increased, and may continue to increase, operational risk. The war in Ukraine may also heighten information technology risk exposures, including cyber-threats. See also "Information Technology Risk Management" below.

Operational risk encompasses fiduciary risk and legal risk. Fiduciary risk is defined as the risk that we fail to properly exercise our fiduciary duties in our provision of products or services to clients. Legal risk is the risk of loss resulting from failure to comply with laws and contractual obligations.

Operational risk is inherent in the performance of investment servicing and investment management activities on behalf of our clients. Whether it be fiduciary risk, risk associated with execution and processing or other types of operational risk, a consistent, transparent and effective operational risk framework is key to identifying, monitoring and managing operational risk.

We have established an operational risk framework that is based on three major goals:

- Strong, active governance;
- Ownership and accountability; and
- Consistency and transparency.

Governance

Our Board is responsible for the approval and oversight of our overall operational risk framework. It does so through its TOPS, which reviews our operational risk framework and recommends RC approval of our operational risk policy annually.

Our operational risk policy establishes our approach to our management of operational risk across our business. The policy identifies the responsibilities of individuals and committees charged with oversight of the management of operational risk, and articulates a broad mandate that supports implementation of the operational risk framework.

ERM and other control groups provide the oversight, validation and verification of the management and measurement of operational risk.

Executive management actively manages and oversees our operational risk framework through membership on various risk management committees, including MRAC, the BCC, TORC, the Operational Risk and Controls Committee, the Cybersecurity Risk Committee, the Enterprise Continuity Steering Committee, the Compliance and Ethics Committee, the Third Party and Outsourcing Risk Committee, and the Fiduciary Review Committee, all of which ultimately report to the appropriate committee of the Board.

The Operational Risk and Controls Committee, chaired by the global head of Operational Risk, provides cross-business oversight of operational risk, operational risk programs and their implementation to identify, measure, manage and control operational risk in an effective and consistent manner and reviews and approves operational risk guidelines intended to maintain a consistent implementation of our corporate operational risk policy and framework.

Ownership and Accountability

We have implemented our operational risk framework to support the broad mandate established by our operational risk policy. This framework represents a set of processes and tools that assists us in the management and measurement of operational risk, including our calculation of required capital and RWA.

The framework utilizes aspects of the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework and other industry leading practices, and is designed foremost to address our risk management needs while complying with regulatory requirements. The operational risk framework is intended to provide a number of important benefits, including:

- A common understanding of operational risk management and its supporting processes;
- The clarification of responsibilities for the management of operational risk across our business;
- The alignment of business priorities with risk management objectives;
- The active management of risk and early identification of emerging risks;
- The consistent application of policies and the collection of data for risk management and measurement; and
- The estimation of our operational risk capital requirement.

The operational risk framework employs a distributed risk management infrastructure executed by ERM groups aligned with the business units, which are responsible for the implementation of the operational risk framework at the business unit level.

As with other risks, senior business unit management is responsible for the day-to-day operational risk management of their respective

businesses. It is business unit management's responsibility to provide oversight of the implementation and ongoing execution of the operational risk framework within their respective organizations, as well as coordination and communication with ERM.

Consistency and Transparency

A number of corporate control functions are directly responsible for implementing and assessing various aspects of our operational risk framework, with the overarching goal of consistency and transparency to meet the evolving needs of the business:

- The global head of Operational Risk, a member of the CRO's executive management team, leads ERM's corporate ORM group. ORM is responsible for the strategy, evolution and consistent implementation of our operational risk guidelines, framework and supporting tools across our business. ORM reviews and analyzes operational key risk information, events, metrics and indicators at the business unit and corporate level for purposes of risk management, reporting and escalation to the CRO, senior management and governance committees;
- ERM's Centralized Modeling and Analytics group develops and maintains operational risk capital estimation models, and ORM's Capital Analysis group calculates our required capital for operational risk;
- ERM's MVG validates the quantitative models used to measure operational risk, and ORM performs validation checks on the output of the model;
- GCS establishes the framework, policies and related programs to measure, monitor and report on information security risks, including the effectiveness of cybersecurity program protections. GCS defines and manages the enterprise-wide information security program. GCS coordinates with Information Technology, control functions and business units to support the confidentiality, integrity and availability of corporate information assets. GCS identifies and employs a risk-based methodology consistent with applicable regulatory cybersecurity requirements and monitors the compliance of our systems with information security policies; and
- Corporate Audit performs separate reviews of the application of operational risk management practices and methodologies utilized across our business.

Our operational risk framework consists of five components, each described below.

Risk Identification and Assessments

The objective of risk identification and assessments is to understand business unit strategy, risk profile and potential exposures. It is achieved through a series of risk assessments across our business using techniques for the identification, assessment and measurement of risk across a spectrum of potential frequency and severity combinations, including business-specific programs to identify, assess and measure risk, such as new business and product review and approval, new client screening, and, as deemed appropriate, targeted risk assessments. Two primary risk assessment programs, which occur annually, augmented by other business-specific programs, are the core of this component:

- The risk and control assessment program seeks to understand the risks associated with day-to-day activities, and the effectiveness of controls intended to manage potential exposures arising from these activities. These risks are typically frequent in nature but generally not severe in terms of exposure; and
- The Material Risk Identification process utilizes a bottom-up approach to identify our most significant risk exposures across all on- and off-balance sheet risk-taking activities. The program is specifically designed to consider risks that could have a material impact irrespective of their likelihood or frequency. This can include risks that may have an impact on longer-term business objectives, such as significant change management activities or long-term strategic initiatives.

Capital Analysis

The primary measurement tool used is an internally developed loss distribution approach (LDA) model. We use the LDA model to quantify required operational risk capital, from which we calculate RWA related to operational risk. Such required capital and RWA totaled $3.42 billion and $42.76 billion, respectively, as of December 31, 2022, compared to $3.64 billion and $45.60 billion, respectively, as of December 31, 2021; refer to the "Capital" section in "Financial Condition," of this Management's Discussion and Analysis.

The LDA model incorporates the three required operational risk elements described below:

- Internal loss event data is collected from across our business in conformity with our operating loss policy that establishes the

requirements for collecting and reporting individual loss events. We categorize the data into seven Basel-defined event types and further subdivide the data by business unit, as deemed appropriate. Each of these loss events are represented in a UOM which is used to estimate a specific amount of capital required for the types of loss events that fall into each specific category. Some UOMs are measured at the corporate level because they are not "business specific," such as damage to physical assets, where the cause of an event is not primarily driven by the behavior of a single business unit. Internal losses of $500 or greater are captured, analyzed and included in the modeling approach. Loss event data is collected using a corporate-wide data collection tool, Incident Capture and Management System (ICAMS), to support processes related to analysis, management reporting and the calculation of required capital. Internal loss event data provides our frequency and severity information to our capital calculation process for historical loss events experienced by us. Internal loss event data may be incorporated into our LDA model in a future quarter following the realization of the losses, with the timing and categorization dependent on the processes for model updates and, if applicable, model revalidation and regulatory review and related supervisory processes. An individual loss event can have a significant effect on the output of our LDA model and our operational risk RWA under the advanced approaches depending on the severity of the loss event, its categorization among the seven Basel-defined UOMs and the stability of the distributional approach for a particular UOM;

- External loss event data provides information with respect to loss event severity from other financial institutions to inform our capital estimation process of events in similar business units at other banking organizations. This information supplements the data pool available for use in our LDA model. Assessments of the sufficiency of internal data and the relevance of external data are completed before pooling the two data sources for use in our LDA model; and
- Business environment and internal control factors are gathered from internal loss event data and business-relevant metrics, such as risk assessment program results, along with industry loss event data and case studies where appropriate. Business environment and internal control factors are those characteristics of a bank's internal and external operating environment that bear an exposure to operational risk. The use of this information indirectly influences our calculation of required capital by providing additional relevant data to workshop participants when reviewing specific UOM risks.

Monitoring, Reporting and Analytics

The objective of risk monitoring is to proactively monitor the changing business environment and corresponding operational risk exposure. It is achieved through a series of quantitative and qualitative monitoring tools that are designed to allow us to understand changes in the business environment, internal control factors, risk metrics, risk assessments, exposures and operating effectiveness, as well as details of loss events and progress on risk initiatives implemented to mitigate potential risk exposures.

Operational risk reporting is intended to provide transparency, thereby enabling management to manage risk, provide oversight and escalate issues in a timely manner. It is designed to allow the business units, executive management, and the Board's control functions and committees to gain insight into activities that may result in risks and potential exposures. Reports are intended to identify business activities that are experiencing processing issues, whether or not they result in actual loss events. Reporting includes results of monitoring activities, internal and external examinations, regulatory reviews and control assessments. These elements combine in a manner designed to provide a view of potential and emerging risks facing us and information that details its progress on managing risks.

Effectiveness and Testing

The objective of effectiveness and testing is to verify that internal controls are designed appropriately, are consistent with corporate and regulatory standards, and are operating effectively. It is achieved through a series of assessments by both internal and external parties, independent registered public accounting firms, business self-assessments and other control function reviews, such as a Sarbanes-Oxley Act of 2002 (SOX) testing program.

Consistent with our standard model validation process, the operational risk LDA model is subject to a detailed review, overseen by the MRC. In addition, the model is subject to a rigorous internal governance process. All changes to the model or input parameters, and the deployment of model updates, are reviewed and approved by the Operational Risk and Controls Committee, which has oversight

responsibility for the model, with technical input from the MRC.

Documentation and Guidelines

Documentation and guidelines allow for consistency and repeatability of the various processes that support the operational risk framework across our business.

Operational risk guidelines document our practices and describe the key elements in a business unit's operational risk management program. The purpose of the guidelines is to set forth and define key operational risk terms, provide further detail on our operational risk programs, and detail the business units' responsibilities to identify, assess, measure, monitor and report operational risk. The guideline supports our operational risk policy.

Data standards have been established with the intent of maintaining consistent data repositories and systems that are controlled, accurate and available on a timely basis to support operational risk management.

Information Technology Risk Management

Overview and Principles

We define information technology risk as the risk associated with the use, ownership, operation, involvement, influence and adoption of information technology. Information technology risk includes risks potentially triggered by technology non-compliance with regulatory obligations, information security and privacy incidents, business disruption, technology internal control and process gaps, technology operational events and adoption of new business technologies.

The principal technology risks within our technology risk policy and risk appetite framework include:

- Third party and vendor management risk;
- Business disruption and technology resiliency risk;
- Technology change management risk;
- Cyber and information security risk;
- Technology asset and configuration risk; and
- Technology obsolescence risk.

Governance

Our Board is responsible for the approval and oversight of our overall technology risk framework and program. It does so through its TOPS, which reviews and approves our technology risk policy and appetite framework annually.

Our technology risk policy establishes our approach to our management of technology risk across our business. The policy identifies the responsibilities of individuals and committees charged with oversight of the management of technology risk and articulates a broad mandate that supports implementation of the technology risk framework.

Risk control functions in the business are responsible for adopting and executing the information technology risk framework and reporting requirements. They do this, in part, by developing and maintaining an inventory of critical applications and supporting infrastructure, as well as identifying, assessing and measuring technology risk utilizing the technology risk framework. They are also responsible for monitoring and evaluating risk on a continual basis using key risk indicators, risk reporting and adopting appropriate risk responses to risk issues.

The Chief Technology Risk Officer, a member of the CRO's executive management team, leads the Enterprise Technology Risk Management (ETRM) function. ETRM is the separate risk function responsible for the technology risk strategy and appetite, and technology risk framework development and execution. ETRM also performs overall technology risk monitoring and reporting to the Board, and provides a separate view of the technology risk posture to executive leadership.

We manage technology risks by:

- Coordinating various risk assessment and risk management activities, including ERM operational risk programs;
- Establishing, through TORC and TOPS of the Board, the enterprise level technology risk and cyber risk appetite and limits;
- Producing enterprise level risk reporting, aggregation, dashboards, profiles and risk appetite statements;
- Validating appropriateness of reporting of information technology risks and risk acceptance to senior management risk committees and the Board;
- Promoting a strong technology risk culture through communication;
- Serving as an escalation and challenge point for technology risk policy guidance, expectations and clarifications;
- Assessing effectiveness of key enterprise information technology risk and internal control remediation programs; and
- Providing risk oversight, challenge and monitoring for the Global Continuity and Third Party Vendor Management Program, including the collection of risk appetite, metrics and key risk indicators, and reviewing issue management processes and consistent program adoption.

Cybersecurity Risk Management

Cybersecurity risk is managed as part of our overall information technology risk framework as outlined above under the direction of our Chief Information Security Officer.

We recognize the significance of cyber-attacks and have taken steps to mitigate the risks associated with them. We have invested in building a mature cybersecurity program to leverage people, technology and processes to protect our systems and the data in our care. We have also implemented a program to help us better measure and manage the cybersecurity risk we face when we engage with third parties for services.

All employees are required to adhere to our cybersecurity policy and standards. Our centralized information security group provides education and training. This training includes a required annual online training class for all employees, multiple simulated phishing attacks and regular information security awareness materials.

We employ Information Security Officers to help the business better understand and manage their information security risks, as well as to work with the centralized Information Security team to drive awareness and compliance throughout the business.

We use independent third parties to perform ethical hacks of key systems to help us better understand the effectiveness of our controls and to better implement more effective controls, and we engage with third parties to conduct reviews of our overall program to help us better align our cybersecurity program with what is required of a large financial services organization.

We have an incident response program in place that is designed to enable a well-coordinated response to mitigate the impact of cyber-attacks, recover from the attack and to drive the appropriate level of communication to internal and external stakeholders.

The TORC assesses and manages the effectiveness of our cybersecurity program, which is overseen by the TOPS of our Board. The TOPS receives regular cybersecurity updates throughout the year and is responsible for reviewing and approving the program on an annual basis.

Market Risk Management

Market risk is defined by U.S. banking regulators as the risk of loss that could result from broad market movements, such as changes in the general level of interest rates, credit spreads, foreign exchange rates or commodity prices. We are exposed to market risk in both our trading and certain of our non-trading, or asset-and-liability management, activities.

Information about the market risk associated with our trading activities is provided below under "Trading Activities." Information about the market risk associated with our non-trading activities, which consists primarily of interest rate risk, is provided below under "Asset-and-Liability Management Activities."

Trading Activities

In the conduct of our trading activities, we assume market risk, the level of which is a function of our overall risk appetite, business objectives and liquidity needs, our clients' requirements and market volatility and our execution against those factors.

We engage in trading activities primarily to support our clients' needs and to contribute to our overall corporate earnings and liquidity. In connection with certain of these trading activities, we enter into a variety of derivative financial instruments to support our clients' needs and to manage our interest rate and currency risk. These activities are generally intended to generate foreign exchange trading services revenue and to manage potential earnings volatility. In addition, we provide services related to derivatives in our role as both a manager and a servicer of financial assets.

Our clients use derivatives to manage the financial risks associated with their investment goals and business activities. With the growth of cross-border investing, our clients often enter into foreign exchange forward contracts to convert currency for international investments and to manage the currency risk in their international investment portfolios. As an active participant in the foreign exchange markets, we provide foreign exchange forward and option contracts in support of these client needs, and also act as a dealer in the currency markets.

As part of our trading activities, we assume positions in the foreign exchange and interest rate markets by buying and selling cash instruments and entering into derivative instruments, including foreign exchange forward contracts, foreign exchange and interest rate options and interest rate swaps, interest rate forward contracts and interest rate futures. As of December 31, 2022, the notional amount of these derivative contracts was $2.31 trillion, of which $2.28 trillion was composed of foreign exchange forward, swap and spot contracts. We seek to match positions closely with the objective of mitigating related currency and interest rate risk. All foreign exchange contracts are valued daily at current market rates.

Governance

Our assumption of market risk in our trading activities is an integral part of our corporate risk appetite. The RC of the Board reviews and oversees our management of market risk, including the approval of key market risk policies and the receipt and review of regular market risk reporting, as well as periodic updates on selected market risk topics.

The previously described CMRC (refer to "Risk Committees") oversees all market risk-taking activities across our business associated with trading. The CMRC, which reports to MRAC, is composed of members of ERM, our global markets business and our Global Treasury group, as well as our senior executives who manage our trading businesses and other members of management who possess specialized knowledge. The CMRC meets regularly to monitor the management of our trading market risk activities.

Our business units identify, manage and are responsible for the market risks inherent in their businesses. A dedicated market risk management group within ERM, and other groups within ERM, work with those business units to assist them in the identification, assessment, monitoring, management and control of market risk, and assist business unit managers with their market risk management and measurement activities. ERM provides an additional line of oversight, support and coordination designed to promote the consistent identification, measurement and management of market risk across business units, separate from those business units' discrete activities.

The ERM market risk management group is responsible for the management of corporate-wide market risk, the monitoring of key market risks and the development and maintenance of market risk management policies, guidelines and standards aligned with our corporate risk appetite. This group also establishes and approves market risk tolerance limits and trading authorities based on, but not limited to, measures of notional amounts, sensitivity, VaR and stress. Such limits and authorities are specified in our trading and market risk guidelines which govern our management of trading market risk.

Risk Appetite

Our corporate market risk appetite is specified in policy statements that outline the governance, responsibilities and requirements surrounding the identification, measurement, analysis, management and communication of market risk arising from our trading activities. These policy statements also set forth the market risk control framework designed to monitor, support, manage and control this portion of our risk appetite. All groups involved in the management and control of market risk associated with trading activities are required to comply with the qualitative and quantitative elements of these policy statements. Our trading market risk control framework is composed of the following:

- A trading market risk management process led by ERM, separate from the business units' discrete activities;
- Defined responsibilities and authorities for the primary groups involved in trading market risk management;
- A trading market risk measurement methodology that captures correlation effects and allows aggregation of market risk across risk types, markets and business lines;
- Daily monitoring, analysis and reporting of market risk exposures associated with trading activities against market risk limits;
- A defined limit structure and escalation process in the event of a market risk limit excess;
- Use of VaR models to measure the one-day market risk exposure of trading positions;
- Use of VaR as a ten-day-based regulatory capital measure of the market risk exposure of trading positions;
- Use of non-VaR-based limits and other controls;
- Use of stressed-VaR models, stress-testing analysis and scenario analysis to support the trading market risk measurement and management process by assessing how portfolios and global business lines perform under extreme market conditions;
- Use of back-testing as a diagnostic tool to assess the accuracy of VaR models and other risk management techniques; and
- A new product approval process that requires market risk teams to assess trading-related market risks and apply risk tolerance limits to proposed new products and business activities.

We use our CAP to assess our overall capital and liquidity in relation to our risk profile and provide a comprehensive strategy for maintaining appropriate capital and liquidity levels. With respect to market risk associated with trading activities, our risk management and our calculations of regulatory capital are based primarily on our internal VaR models and stress testing analysis. As discussed in detail under "Value-at-Risk and Stressed VaR" below, VaR is measured daily by ERM.

The CMRC oversees our market risk exposure in relation to limits established within our risk appetite framework. These limits define threshold levels for

VaR- and stressed VaR-based measures and are applicable to all trading positions subject to regulatory capital requirements. These limits are designed to mitigate undue concentration of market risk exposure, in light of the primarily non-proprietary nature of our trading activities. The risk appetite framework and associated limits are reviewed and approved by the Board's RC.

Covered Positions

Our trading positions are subject to regulatory market risk capital requirements if they meet the regulatory definition of a "covered position." A covered position is generally defined by U.S. banking regulators as an on- or off-balance sheet position associated with the organization's trading activities that is free of any restrictions on its tradability, but does not include intangible assets, certain credit derivatives recognized as guarantees and certain equity positions not publicly traded. All FX and commodity positions are considered covered positions, regardless of the accounting treatment they receive. The identification of covered positions for inclusion in our market risk capital framework is governed by our trading and market risk guidelines, which outlines the standards we use to determine whether a trading position is a covered position.

Our covered positions consist primarily of the trading portfolios held by our global markets business. They also arise from certain positions held by our Global Treasury group. These trading positions include products such as foreign exchange spot, foreign exchange forwards, non-deliverable forwards, foreign exchange options, foreign exchange funding swaps, currency futures, financial futures and interest rate futures. New activities are analyzed to determine if the positions arising from such new activities meet the definition of a covered position and conform to our trading and market risk guidelines. This documented analysis, including any decisions with respect to market risk treatments, must receive approval from the CMRC.

We use spot rates, forward points, yield curves and discount factors imported from third-party sources to measure the value of our covered positions, and we use such values to mark our covered positions to market on a daily basis. These values are subject to separate validation by us in order to evaluate reasonableness and consistency with market experience. The mark-to-market gain or loss on spot transactions is calculated by applying the spot rate to the foreign currency principal and comparing the resultant base currency amount to the original transaction principal. The mark-to-market gain or loss on a forward foreign exchange contract or forward cash flow contract is determined as the difference between the life-to-date (historical) value of the cash flow and the value of the cash flow at the inception of the transaction. The mark-to-market gain or loss on interest rate swaps is determined by discounting the future cash flows from each leg of the swap transaction.

Value-at-Risk and Stressed VaR

We use a variety of risk measurement tools and methodologies, including VaR, which is an estimate of potential loss for a given period within a stated statistical confidence interval. We use a risk measurement methodology to measure trading-related VaR daily. We have adopted standards for measuring trading-related VaR, and we maintain regulatory capital for market risk associated with our trading activities in conformity with currently applicable bank regulatory market risk requirements.

We utilize an internal VaR model to calculate our regulatory market risk capital requirements. We use a historical simulation model to calculate daily VaR- and stressed VaR-based measures for our covered positions in conformity with regulatory requirements. Our VaR model seeks to capture identified material risk factors associated with our covered positions, including risks arising from market movements such as changes in foreign exchange rates, interest rates and option-implied volatilities.

We have adopted standards and guidelines to value our covered positions which govern our VaR- and stressed VaR-based measures. Our regulatory VaR-based measure is calculated based on historical volatilities of market risk factors during a two-year observation period calibrated to a one-tail, 99% confidence interval and a ten-business-day holding period. We also use the same platform to calculate a one-tail, 99% confidence interval, one-business-day VaR for internal risk management purposes. A 99% one-tail confidence interval implies that daily trading losses are not expected to exceed the estimated VaR more than 1% of the time, or less than three business days out of a year.

Our market risk models, including our VaR model, are subject to change in connection with the governance, validation and back-testing processes described below. These models can change as a result of changes in our business activities, our historical experiences, market forces and events, regulations and regulatory interpretations and other factors. In addition, the models are subject to continuing regulatory review and approval. Changes in our models may result in changes in our measurements of our market risk exposures, including VaR, and related measures, including regulatory capital. These changes could result in material changes in those risk measurements and related measures as calculated and compared from period to period.

Value-at-Risk Measures

VaR measures are based on the most recent two years of historical price movements for instruments and related risk factors to which we have exposure. The instruments in question are limited to foreign exchange spot, forward and options contracts and interest rate contracts, including futures and interest rate swaps. Historically, these instruments have exhibited a higher degree of liquidity relative to other available capital markets instruments. As a result, the VaR measures shown reflect our ability to rapidly adjust exposures in highly dynamic markets. For this reason, risk inventory, in the form of net open positions, across all currencies is typically limited. In addition, long and short positions in major, as well as minor, currencies provide risk offsets that limit our potential downside exposure.

Our VaR methodology uses a historical simulation approach based on market-observed changes in foreign exchange rates, U.S. and non-U.S. interest rates and implied volatilities, and incorporates the resulting diversification benefits provided from the mix of our trading positions. Our VaR model incorporates approximately 5,000 risk factors and includes correlations among currency, interest rates and other market rates.

All VaR measures are subject to limitations and must be interpreted accordingly. Some, but not all, of the limitations of our VaR methodology include the following:

- Compared to a shorter observation period, a two-year observation period is slower to reflect increases in market volatility (although temporary increases in market volatility will affect the calculation of VaR for a longer period); consequently, in periods of sudden increases in volatility or increasing volatility, in each case relative to the prior two-year period, the calculation of VaR may understate current risk;
- Compared to a longer observation period, a two-year observation period may not reflect as many past periods of volatility in the markets, because such past volatility is no longer in the observation period; consequently, historical market scenarios of high volatility, even if similar to current or likely future market circumstances, may fall outside the two-year observation period, resulting in a potential understatement of current risk;
- The VaR-based measure is calibrated to a specified level of confidence and does not indicate the potential magnitude of losses beyond this confidence level;
- In certain cases, VaR-based measures approximate the impact of changes in risk factors on the values of positions and portfolios; this may happen because the number of inputs included in the VaR model is necessarily limited; for example, yield curve risk factors do not exist for all future dates;
- The use of historical market information may not be predictive of future events, particularly those that are extreme in nature; this "backward-looking" limitation can cause VaR to understate or overstate risk;
- The effect of extreme and rare market movements is difficult to estimate; this may result from non-linear risk sensitivities as well as the potential for actual volatility and correlation levels to differ from assumptions implicit in the VaR calculations; and
- Intra-day risk is not captured.

We calculate a stressed VaR-based measure using the same model we use to calculate VaR, but with model inputs calibrated to historical data from a range of continuous twelve-month periods that reflect significant financial stress. The stressed VaR model is designed to identify the second-worst outcome occurring in the worst continuous one-year rolling period since July 2007. This stressed VaR meets the regulatory requirement as the rolling ten-day period with an outcome that is worse than 99% of other outcomes during that twelve-month period of financial stress. For each portfolio, the stress period is determined algorithmically by seeking the one-year time horizon that produces the largest ten-business-day VaR from within the available historical data. This historical data set includes the financial crisis of 2008, the highly volatile period surrounding the Eurozone sovereign debt crisis and the Standard & Poor's downgrade of U.S. Treasury debt in August 2011. As the historical data set used to determine the stress period expands over time, future market stress events will be incorporated.

Stress Testing

We have a corporate-wide stress testing program in place that incorporates techniques to measure the potential loss we could suffer in a hypothetical scenario of adverse economic and financial conditions. We also monitor concentrations of risk such as concentration by branch, risk component, and currency pairs. We conduct stress testing on a daily basis based on selected historical stress events that are relevant to our positions in order to estimate the potential impact to our current portfolio should similar market conditions recur, and we also perform stress testing as part of the Federal Reserve's CCAR process. Stress testing is conducted, analyzed and reported at the corporate, trading desk, division and risk-factor level (for example, exchange risk, interest rate risk and volatility risk).

Stress testing results and limits are actively monitored on a daily basis by ERM and reported to the CMRC. Limit breaches are addressed by ERM risk managers in conjunction with the business units, escalated as appropriate, and reviewed by the CMRC if material. In addition, we have established several action triggers that prompt immediate review by management and the implementation of a remediation plan.

We perform scenario analysis daily based on selected historical stress events that are relevant to our positions in order to estimate the potential impact to our current portfolio should similar market conditions recur. Relevant scenarios are chosen from an inventory of historical financial stresses and applied to our current portfolio. These historical event scenarios involve spot foreign exchange, credit, equity, unforeseen geo-political events and natural disasters, and government and central bank intervention scenarios. Examples of the specific historical scenarios we incorporate in our stress testing program may include the Asian financial crisis of 1997, the September 11, 2001 terrorist attacks in the U.S. and the 2008 financial crisis. We continue to update our inventory of historical stress scenarios as new stress conditions emerge in the financial markets.

As each of the historical stress events is associated with a different time horizon, we normalize results by scaling down the longer horizon events to a ten-day horizon and keeping the shorter horizon events (i.e., events that are shorter than ten days) at their original terms. We also conduct sensitivity analysis daily to calculate the impact of a large predefined shock in a specific risk factor or a group of risk factors on our current portfolio. These predefined shocks include parallel and non-parallel yield curve shifts and foreign exchange spot and volatility surface shifts. In a parallel shift scenario, we apply a constant factor shift across all yield curve tenors. In a non-parallel shift scenario, we apply different shock levels to different tenors of a yield curve, rather than shifting the entire curve by a constant amount. Non-parallel shifts include steepening, flattening and butterflies.

Validation and Back-Testing

We perform frequent back-testing to assess the accuracy of our VaR-based model in estimating loss at the stated confidence level. This back-testing involves the comparison of estimated VaR model outputs to daily, actual profit-and-loss (P&L) outcomes observed from daily market movements. We back-test our VaR model using "clean" P&L, which excludes non-trading revenue such as fees, commissions and NII, as well as estimated revenue from intra-day trading.

Our VaR definition of trading losses excludes items that are not specific to the price movement of the trading assets and liabilities themselves, such as fees, commissions, changes to reserves and gains or losses from intra-day activity.

We experienced three back-testing exceptions in 2022 and one back-testing exception in 2021. At a 99% confidence interval, the statistical expectation for a VaR model is to witness one exception every hundred trading days (or two to three exceptions per year). Two 2022 back-testing exceptions occurred on days of higher volatility on the back of market concerns on economic outlook, inflation and central bank rate policy. A third back-testing exception occurred during the UK market turmoil in late September 2022. The 2021 back-testing exception has been attributed to dislocation in FX markets caused by greater demand for funding over year-end periods.

Our model validation process also evaluates the integrity of our VaR models through the use of regular outcome analysis. This outcome analysis includes back-testing, which compares the VaR model's predictions to actual outcomes using out-of-sample information. Consistent with regulatory guidance, the back-testing compared "clean" P&L, defined above, with the one-day VaR produced by the model. The back-testing was performed for a time period not used for model development. The number of occurrences where "clean" trading-book P&L exceeded the one-day VaR was within our expected VaR tolerance level.

Market Risk Reporting

Our ERM market risk management group is responsible for market risk monitoring and reporting. We use a variety of systems and controlled market feeds from third-party services to compile data for several daily, weekly and monthly management reports.

The following tables present VaR and stressed VaR associated with our trading activities for covered positions held during the years ended December 31, 2022 and 2021, respectively, as measured by our VaR methodology. Diversification effect in the tables below represents the difference between total VaR and the sum of the VaRs for each trading activity. This effect arises because the risks present in our trading activities are not perfectly correlated.

TABLE 32: TEN-DAY VALUE-AT-RISK ASSOCIATED WITH TRADING ACTIVITIES FOR COVERED POSITIONS

	Year Ended December 31, 2022			As of December 31, 2022	Year Ended December 31, 2021			As of December 31, 2021
(In thousands)	Average	Maximum	Minimum	VaR	Average	Maximum	Minimum	VaR
Global Markets	$ 8,567	$ 25,779	$ 2,631	$ 7,591	$ 15,214	$ 30,485	$ 5,252	$ 16,998
Global Treasury	2,661	7,255	559	5,632	3,189	9,762	220	3,556
Diversification	(2,591)	(6,959)	311	(6,075)	(2,115)	(7,958)	1,024	(4,519)
Total VaR	$ 8,637	$ 26,075	$ 3,501	$ 7,148	$ 16,288	$ 32,289	$ 6,496	$ 16,035

TABLE 33: TEN-DAY STRESSED VALUE-AT-RISK ASSOCIATED WITH TRADING ACTIVITIES FOR COVERED POSITIONS

	Year Ended December 31, 2022			As of December 31, 2022	Year Ended December 31, 2021			As of December 31, 2021
(In thousands)	Average	Maximum	Minimum	VaR	Average	Maximum	Minimum	VaR
Global Markets	$ 35,391	$ 97,420	$ 16,413	$ 30,778	$ 41,698	$ 101,535	$ 13,037	$ 65,840
Global Treasury	4,629	17,695	778	8,431	9,601	29,651	814	12,419
Diversification	(5,693)	(19,176)	(1,014)	(12,206)	(5,607)	(20,018)	2,918	(17,505)
Total Stressed VaR	$ 34,327	$ 95,939	$ 16,177	$ 27,003	$ 45,692	$ 111,168	$ 16,769	$ 60,754

The average and period-end stressed VaR-based measures were approximately $34 million and $27 million, respectively, for the year ended December 31, 2022, compared to $46 million and $61 million, respectively, for the year ended December 31, 2021. The decrease in the average and period-end VaR-based and stressed VaR-based measures is primarily attributed to lower foreign exchange and interest rate risk positions.

The VaR-based measures as presented in the preceding tables are primarily a reflection of the overall level of market volatility and our appetite for taking market risk in our trading activities. While overall levels of volatility have varied over the historical observation periods, smaller residual market risk positions during the quarter have led to a reduction in VaR measures presented.

We have in the past and may in the future modify and adjust our models and methodologies used to calculate VaR and stressed VaR, subject to regulatory review and approval, and any future modifications and adjustments may result in changes in our VaR-based and stressed VaR-based measures.

The following tables present the VaR and stressed-VaR associated with our trading activities attributable to foreign exchange risk, interest rate risk and volatility risk as of December 31, 2022 and 2021, respectively. The totals of the VaR-based and stressed VaR-based measures for the three attributes in total exceeded the related total VaR and total stressed VaR presented in the foregoing tables as of each period-end, primarily due to the benefits of diversification across risk types. Diversification effect in the tables below represents the difference between total VaR and the sum of the VaRs for each trading activity. This effect arises because the risks present in our trading activities are not perfectly correlated.

TABLE 34: TEN-DAY VaR ASSOCIATED WITH TRADING ACTIVITIES BY RISK FACTOR[(1)]

	Year Ended December 31, 2022			Year Ended December 31, 2021		
(In thousands)	Foreign Exchange Risk	Interest Rate Risk	Volatility Risk	Foreign Exchange Risk	Interest Rate Risk	Volatility Risk
By component:						
Global Markets	$ 5,562	$ 4,656	$ 358	$ 6,945	$ 16,424	$ 108
Global Treasury	5,602	1,442	—	531	3,688	—
Diversification	(6,344)	(1,155)	—	(877)	(3,682)	—
Total VaR	$ 4,820	$ 4,943	$ 358	$ 6,599	$ 16,430	$ 108

TABLE 35: TEN-DAY STRESSED VaR ASSOCIATED WITH TRADING ACTIVITIES BY RISK FACTOR[1]

	Year Ended December 31, 2022			Year Ended December 31, 2021		
(In thousands)	**Foreign Exchange Risk**	**Interest Rate Risk**	**Volatility Risk**	**Foreign Exchange Risk**	**Interest Rate Risk**	**Volatility Risk**
By component:						
Global Markets	**$ 9,527**	**$ 37,077**	**$ 565**	$ 9,445	$ 63,368	$ 157
Global Treasury	**7,623**	**9,941**	**—**	667	13,218	—
Diversification	**(8,189)**	**(15,328)**	**—**	(1,551)	(17,500)	—
Total Stressed VaR	**$ 8,961**	**$ 31,690**	**$ 565**	$ 8,561	$ 59,086	$ 157

[1] For purposes of risk attribution by component, foreign exchange refers only to the risk from market movements in period-end rates. Forwards, futures, options and swaps with maturities greater than period-end have embedded interest rate risk that is captured by the measures used for interest rate risk. Accordingly, the interest rate risk embedded in these foreign exchange instruments is included in the interest rate risk component.

Asset and Liability Management Activities

The primary objective of asset and liability management is to provide sustainable NII under varying economic conditions, while protecting the economic value of the assets and liabilities carried on our consolidated statement of condition from the adverse effects of changes in interest rates. While many market factors affect the level of NII and the economic value of our assets and liabilities, one of the most significant factors is our exposure to movements in interest rates. Most of our NII is earned from the investment of client deposits generated by our businesses. We invest these client deposits in assets that conform generally to the liquidity characteristics of our balance sheet liabilities, as well as the currency composition of our significant non-U.S. dollar denominated client deposits.

We quantify NII sensitivity using an earnings simulation model that includes our expectations for new business growth, changes in balance sheet mix and investment portfolio positioning. This measure compares our baseline view of NII over a twelve-month horizon, based on our internal forecast of interest rates, to a wide range of rate shocks. Our baseline view of NII is updated on a regular basis. Table 36, Key Interest Rates for Baseline Forecasts, presents the spot and 12-month forward rates used in our baseline forecasts at December 31, 2022 and 2021. Our baseline rate forecast as of December 31, 2022 was generally consistent with common market expectations for global central bank actions at that point in time, which implied rates to reach peak levels in the first half of 2023 and rate cuts to begin as early as the fourth quarter of 2023.

TABLE 36: KEY INTEREST RATES FOR BASELINE FORECASTS

	December 31, 2022			December 31, 2021		
	Fed Funds Target	**ECB Target[1]**	**10-Year Treasury**	**Fed Funds Target**	**ECB Target[1]**	**10-Year Treasury**
Spot rates	**4.50 %**	**2.00 %**	**3.87 %**	0.25 %	(0.50)%	1.77 %
12-month forward rates	**4.75**	**3.00**	**3.81**	1.00	(0.50)	1.95

[1] European Central Bank deposit facility rate.

In Table 37: Net Interest Income Sensitivity, we report the expected change in NII over the next twelve months from instantaneous shocks to various tenors on the yield curve relative to our baseline rate forecast, including the impacts from U.S. and non-U.S. rates. Each scenario assumes no management action is taken to mitigate the adverse effects of changes in interest rates on our financial performance. While investment securities balances and composition can fluctuate with the level of rates as prepayment assumptions change, for purposes of this analysis our deposit balances and mix are assumed to remain consistent with the baseline forecast which assumes client deposit balance rotation including reductions in non-interest-bearing deposit balances. In lower rate scenarios, the full impact of the shock is realized for all currencies even if the result is negative interest rates.

TABLE 37: NET INTEREST INCOME SENSITIVITY

	December 31, 2022			December 31, 2021		
(In millions)	**U.S. Dollar**	**All Other Currencies**	**Total**	**U.S. Dollar**	**All Other Currencies**	**Total**
Rate change:	**Benefit (Exposure)**			**Benefit (Exposure)**		
Parallel shifts:						
+100 bps shock	**$ (225)**	**$ 432**	**$ 207**	$ 447	$ 306	$ 753
–100 bps shock	**207**	**(419)**	**(212)**	384	(39)	345
Steeper yield curve:						
'+100 bps shift in long-end rates[1]	**42**	**23**	**65**	114	16	130
'-100 bps shift in short-end rates[1]	**250**	**(397)**	**(147)**	519	(22)	497
Flatter yield curve:						
'+100 bps shift in short-end rates[1]	**(267)**	**409**	**142**	337	290	627
'-100 bps shift in long-end rates[1]	**(43)**	**(22)**	**(65)**	(132)	(16)	(148)

[1] The short end is 0-3 months. The long end is 5 years and above. Interim term points are interpolated.

Our overall balance sheet, including all currencies, continues to be asset sensitive with an NII benefit in higher rate scenarios. However, our USD balance sheet has become liability sensitive driven by rising USD deposit betas and deposit balance rotation. Our NII sensitivities assumes no management actions are taken to change modeled outcomes including the +100 basis point scenario which assumes that the level of Fed Funds reaches a peak of 6.0%.

As of December 31, 2022,USD NII benefits in lower rate scenarios and is exposed to higher rates primarily driven by our sensitivities on the short-end of the yield curve. Compared to December 31, 2021, our short-end USD sensitivity has changed due to the higher level of market interest rates and the Federal Reserve's quantitative tightening program resulting in higher deposit betas and deposit balance rotation and reductions. Long end USD sensitivities have decreased since December 31, 2021 as the implementation of investment portfolio risk reduction strategies lowered our forecasted long-end reinvestment.

As of December 31, 2022, non-USD NII benefits in higher rate scenarios and is exposed to lower rates primarily driven by our sensitivities on the short-end of the yield curve. Compared to December 31, 2021, our short-end non-USD sensitivity to higher rates has increased due to the ECB shifting from negative to positive interest rates resulting in lower deposit betas. Our short-end non-USD sensitivity to lower rates has become negative due to higher non-USD yield curves which are no longer impacted by negative interest rates in the -100bp scenario. The December 31, 2021 sensitivities included a significant NII benefit from negative rates by charging interest on client deposits and the impacts of contractual floors on loans and securities.

EVE sensitivity is a discounted cash flow model designed to estimate the fair value of assets and liabilities under a series of interest rate shocks over a long-term horizon. In the following table, we report our EVE sensitivity to 200 bps instantaneous rate shocks, relative to spot interest rates. Management compares the change in EVE sensitivity against our aggregate Tier 1 and Tier 2 risk-based capital, calculated in conformity with current applicable regulatory requirements. EVE sensitivity is dependent on the timing of interest and principal cash flows. Also, the measure only evaluates the spot balance sheet and does not include the impact of new business assumptions.

TABLE 38: ECONOMIC VALUE OF EQUITY SENSITIVITY

	As of December 31,	
(In millions)	**2022**	**2021**
Rate change:	**Benefit (Exposure)**	
+200 bps shock	**$ (917)**	$ (1,380)
–200 bps shock	**1,082**	3,829

As of December 31, 2022, EVE sensitivity remains exposed to upward shifts in interest rates. Compared to December 31, 2021, our sensitivity in the up 200bp shock scenario decreased due to the implementation of investment portfolio risk reduction strategies resulting in lower securities duration, partially offset by-reduced deposit duration due to higher rates and modelling updates. Compared to December 31, 2021, the change in the down 200 bps scenario is primarily driven by deposit valuation changes between positive and negative rate environments.

Both NII sensitivity and EVE sensitivity are routinely monitored as market conditions change. For additional information about our Asset and Liability Management Activities, refer to Management's Discussion and Analysis of Financial Condition and Results of Operations, "Risk Management."

Model Risk Management

The use of models is widespread throughout the financial services industry, with large and complex organizations relying on sophisticated models to support numerous aspects of their financial decision making. The models contemporaneously represent both a significant advancement in financial management and a source of risk. In large banking organizations like us, model results influence business decisions, and model failure could have a harmful effect on our financial performance. As a result, the MRM Framework seeks to mitigate our model risk.

Our MRM program has three principal components:

- A model risk governance program that defines roles and responsibilities, including the authority to restrict model usage, provides policies and guidance, monitors compliance and reports regularly to the Board on the overall degree of model risk across the corporation;
- A model development process that focuses on sound design and computational accuracy, and includes activities designed to assess data quality, to test for robustness, stability and sensitivity to assumptions, and to conduct ongoing monitoring of model performance; and
- An independent model validation function designed to verify that models are conceptually sound, computationally accurate, are performing as expected, and are in line with their intended use.

The MRM Framework, highlighted above, also provides insight and guidance into addressing key model risks that arise.

Governance

Models used in the regulatory capital calculation can only be deployed for use after undergoing a model validation by ERM's MRM group. The model validation results and/or a decision by the Model Risk Committee must permit model usage or the model may not be used.

ERM's MRM group is responsible for defining the corporate-wide model risk management framework, maintaining policies that are designed to achieve the framework's objectives. All regulatory capital calculation models, including any artificial intelligence and machine learning models, must comply with the model risk management framework and corresponding policies. The team is responsible for overall model risk governance capabilities, with particular emphasis in the areas of model validation, model risk reporting, model performance monitoring, tracking of new model development status and committee-level review and challenge.

MRC, which is composed of senior managers responsible for representing functional areas and business units with key models across the organization, reports to MRAC, and provides guidance and oversight to the MRM function.

Model Development and Ongoing Monitoring

Models are developed under standards governing data sourcing, methodology selection and model integrity testing. Model development includes a statement of purpose to align development with intended use. It may also include a comparison of alternative approaches to promote a sound modeling approach.

Model developers conduct an assessment of data quality and relevance. The development teams conduct a variety of tests of the accuracy, robustness and stability of each model.

Model owners submit models to the MVG for validation on a regular basis, as per the existing policy. The model owners also conduct ongoing monitoring of each model.

Model Validation

MVG is part of MRM within ERM and performs model validations and reviews. MVG is independent, as contemplated by applicable bank regulatory requirements, of both the developers and users of the models. MVG validates models through an evaluation process that assesses the appropriateness, accuracy, and suitability of data inputs, methodologies, documentation, assumptions, and processing code. Model validation also encompasses an assessment of model performance, sensitivity, and robustness, as well as a model's potential limitations given its particular assumptions or deficiencies. Based on the results of its review, MVG issues a model use decision and may require remedial actions and/or compensating controls on model use. MVG also maintains a model risk rating system, which assigns a risk rating to each model based on an assessment of a model's inherent and residual risks. These ratings aid in the understanding and reporting of model risk across the model portfolio, and enable the triaging of needs for remediation.

Although model validation is the primary method of subjecting models to independent review and challenge, in practice, a multi-step governance process provides the opportunity for challenge by multiple parties. First, MVG conducts a model validation and issues a model use decision. MVG communicates their result as one of the following three outcomes: "Approved", "Approved with conditions", or "Not Approved". There are three ways

in which a model can be deemed "Not approved for Use" given a validation: 1) the aggregation of the model scoring within MRM's model risk rating system is poor enough to result in a "high" rating, 2) the scoring of one or more model risk rating system element(s) is deemed "critical" resulting in an automatic "high" rating irrespective of the other elements as the "critical" element(s) undermines the model, or 3) the remediation action is not properly taken by the due date resulting in a severe compliance breach that undercuts the model rating. Second, these decisions may be reviewed, challenged, and confirmed by the MRC. Finally, model use decisions, risk ratings, and overall levels of model risk may be reported to and reviewed by MRAC. MRM also reports regularly on model risk issues to the Board.

Strategic Risk Management

We define strategic risk as the current or prospective impact on earnings or capital arising from adverse business decisions, improper implementation of strategic initiatives, or lack of responsiveness to industry-wide changes. Strategic risks are influenced by changes in the competitive environment; decline in market performance or changes in our business activities; and the potential secondary impacts of reputational risks, not already captured as market, interest rate, credit, operational, model or liquidity risks. We incorporate strategic risk into our assessment of our business plans and risk and capital management processes. Management of strategic risk is an integral component of all aspects of our business.

Separating the effects of a potential material adverse event into operational and strategic risk is sometimes difficult. For instance, the direct financial impact of an unfavorable event in the form of fines or penalties would be classified as an operational risk loss, while the impact on our reputation and consequently the potential loss of clients and corresponding decline in revenue would be classified as a strategic risk loss. An additional example of strategic risk is the integration of a major acquisition. Failure to successfully integrate the operations of an acquired business, and the resultant inability to retain clients and the associated revenue, would be classified as a loss due to strategic risk.

Strategic risk is managed with a long-term focus. Techniques for its assessment and management include the development of business plans, which are subject to review and challenge from senior management and the Board of Directors, as well as a formal review and approval process for all new business and product proposals. The potential impact of the various elements of strategic risk is difficult to quantify with any degree of precision. We use a combination of historical earnings volatility, scenario analysis, stress-testing and management judgment to help assess the potential effect on us attributable to strategic risk. Management and control of strategic risks are generally the responsibility of the business units, with oversight from the control functions, as part of their overall strategic planning and internal risk management processes.

CAPITAL

Managing our capital involves evaluating whether our actual and projected levels of capital are commensurate with our risk profile, are in compliance with all applicable regulatory requirements, and are sufficient to provide us with the financial flexibility to undertake future strategic business initiatives. We assess capital adequacy based on relevant regulatory capital requirements, as well as our own internal capital goals, targets and other relevant metrics.

Framework

Our objective with respect to management of our capital is to maintain a strong capital base in order to provide financial flexibility for our business needs, including funding corporate growth and supporting clients' cash management needs, and to provide protection against loss to depositors and creditors. We strive to maintain an appropriate level of capital, commensurate with our risk profile, on which an attractive return to shareholders is expected to be realized over both the short and long-term, while protecting our obligations to depositors and creditors and complying with regulatory capital requirements.

Our capital management focuses on our risk exposures, the regulatory requirements applicable to us with respect to multiple capital measures, the evaluations and resulting credit ratings of the major independent rating agencies, our return on capital at both the consolidated and line-of-business level and our capital position relative to our peers.

Assessment of our overall capital adequacy includes the comparison of capital sources with capital uses, as well as the consideration of the quality and quantity of the various components of capital. The assessment seeks to determine the optimal level of capital and composition of capital instruments to satisfy all constituents of capital, with the lowest overall cost to shareholders. Other factors considered in our assessment of capital adequacy are strategic and contingency planning, stress testing and planned capital actions.

Capital Adequacy Process (CAP)

Our primary federal banking regulator is the Federal Reserve. Both we and State Street Bank are subject to the minimum regulatory capital requirements established by the Federal Reserve and defined in the Federal Deposit Insurance Corporation

Improvement Act. State Street Bank must exceed the regulatory capital thresholds for "well capitalized" in order for our Parent Company to maintain its status as a financial holding company. Accordingly, one of our primary objectives with respect to capital management is to exceed all applicable minimum regulatory capital requirements and for State Street Bank to be "well capitalized" under the PCA guidelines established by the FDIC. Our capital management activities are conducted as part of our corporate-wide CAP and associated Capital Policy and Guidelines.

We consider capital adequacy to be a key element of our financial well-being, which affects our ability to attract and maintain client relationships; operate effectively in the global capital markets; and satisfy regulatory, security holders and shareholder needs. Capital is one of several elements that affect our credit ratings and the ratings of our principal subsidiaries.

In conformity with our Capital Policy and Guidelines, we strive to achieve and maintain specific internal capital levels, not just at a point in time, but over time and during periods of stress, to account for changes in our strategic direction, evolving economic conditions, and financial and market volatility. We have developed and implemented a corporate-wide CAP to assess our overall capital in relation to our risk profile and to provide a comprehensive strategy for maintaining appropriate capital levels. The CAP considers material risks under multiple scenarios, with an emphasis on stress scenarios, and encompasses existing processes and systems used to measure our capital adequacy.

Capital Contingency Planning

Contingency planning is an integral component of capital management. The objective of contingency planning is to monitor current and forecast levels of select capital, liquidity and other measures that serve as early indicators of a potentially adverse capital or liquidity adequacy situation. These measures are one of the inputs used to set our internal capital adequacy level. We review these measures annually for appropriateness and relevance in relation to our financial budget and capital plan. In addition, we maintain an inventory of capital contingency actions designed to conserve or generate capital to support the unique risks in our business model, our client and investor demands and regulatory requirements.

Stress Testing

We administer a robust business-wide stress-testing program that executes stress tests each year to assess the institution's capital adequacy and/or future performance under adverse conditions. Our stress testing program is structured around what we determine to be the key risks inherent in our business, as assessed through a recurring material risk identification process. The material risk identification process represents a bottom-up approach to identifying the institution's most significant risk exposures across all on- and off-balance sheet risk-taking activities, including credit, market, liquidity, interest rate, operational, fiduciary, business, reputation and regulatory risks. These key risks serve as an organizing principle for much of our risk management framework, as well as reporting, including the "risk dashboard" provided to the Board.

In connection with the focus on our key risks, each stress test incorporates idiosyncratic loss events tailored to our unique risk profile and business activities. Due to the nature of our business model and our consolidated statement of condition, our risks differ from those of a traditional commercial bank. Over the past few years, stress scenarios have included a deep recession in the U.S., including impacts from the COVID-19 pandemic, a break-up of the Eurozone, a severe recession in China and an oil shock precipitated by turmoil in the Middle East/North Africa region.

The Federal Reserve requires bank holding companies with total consolidated assets of $50 billion or more, which includes us, to submit a capital plan on an annual basis. The Federal Reserve uses its annual CCAR process, which incorporates hypothetical financial and economic stress scenarios, to review those capital plans and assess whether banking organizations have capital planning processes that account for idiosyncratic risks and provide for sufficient capital to continue operations throughout times of economic and financial stress. As part of its CCAR process, the Federal Reserve assesses each organization's capital adequacy, capital planning process and plans to distribute capital, such as dividend payments or stock purchase programs. Management and Board risk committees review, challenge and approve CCAR results and assumptions before submission to the Federal Reserve.

Through the evaluation of our capital adequacy and/or future performance under adverse conditions, the stress testing process provides us important insights for capital planning, risk management and strategic decision-making.

Governance

In order to support integrated decision making, we have identified three management elements to aid in the compatibility and coordination of our CAP:

- Risk Management - identification, measurement, monitoring and forecasting of different types of risk and their combined impact on capital adequacy;

- Capital management - determination of optimal capital levels; and
- Business Management - strategic planning, budgeting, forecasting and performance management.

We have a hierarchical structure supporting appropriate committee review of relevant risk and capital information. The ongoing responsibility for capital management rests with our Treasurer. The Capital Management group within Global Treasury is responsible for the Capital Policy and Guidelines, development of the Capital Plan, the oversight of global capital management and optimization.

The MRAC provides oversight of our capital management, our capital adequacy, our internal targets and the expectations of the major independent credit rating agencies. In addition, MRAC approves our balance sheet strategy and related activities. The Board's RC assists the Board in fulfilling its oversight responsibilities related to the assessment and management of risk and capital. Our Capital Policy is reviewed and approved annually by the Board's RC.

Global Systemically Important Bank

We have been identified by the Financial Stability Board and the Basel Committee on Banking Supervision as a G-SIB. Our designation as a G-SIB is based on a number of factors, as evaluated by banking regulators, and requires us to maintain an additional capital surcharge above the minimum capital ratios set forth in the Basel III rule.

We and our depositary institution subsidiaries are subject to the current Basel III minimum risk-based capital and leverage ratio guidelines.

Additional information about G-SIBs is provided under "Regulatory Capital Adequacy and Liquidity Standards" in "Supervision and Regulation" in Business in this Form 10-K.

Regulatory Capital

We and State Street Bank, as advanced approaches banking organizations, are subject to the U.S. Basel III framework. We are also subject to the final market risk capital rule issued by U.S. banking regulators.

The Basel III rule provides for two frameworks for monitoring capital adequacy: the "standardized approach" and the "advanced approaches", applicable to advanced approaches banking organizations, like us. The standardized approach prescribes standardized calculations for credit risk RWA, including specified risk weights for certain on- and off-balance sheet exposures. The advanced approaches consist of the Advanced Internal Ratings-Based Approach used for the calculation of RWA related to credit risk, and the Advanced Measurement Approach used for the calculation of RWA related to operational risk.

As required by the Dodd-Frank Act enacted in 2010, we and State Street Bank, as advanced approaches banking organizations, are subject to a "capital floor," also referred to as the Collins Amendment, in the assessment of our regulatory capital adequacy, such that our risk-based capital ratios for regulatory assessment purposes are the lower of each ratio calculated under the advanced approaches and the standardized approach. Under the advanced approaches, State Street and State Street Bank are subject to a 2.5% CCB requirement, plus any applicable countercyclical capital buffer requirement, which is currently set at 0%. Under the standardized approach, State Street Bank is subject to the same CCB and countercyclical capital buffer requirements, but for State Street, the 2.5% CCB requirement is replaced by the SCB requirement according to the SCB rule issued in 2020. In addition, State Street is subject to a G-SIB surcharge.

The SCB replaced, under the standardized approach, the CCB with a buffer calculated as the difference between the institution's starting and lowest projected CET1 ratio under the CCAR severely adverse scenario plus planned common stock dividend payments (as a percentage of RWA) from the fourth through seventh quarter of the CCAR planning horizon. The SCB requirement can be no less than 2.5% of RWA. Breaching the SCB or other regulatory buffer or surcharge will limit a banking organization's ability to make capital distributions and discretionary bonus payments to executive officers. The countercyclical capital buffer is currently set at zero by U.S. banking regulators.

Our minimum risk-based capital ratios as of January 1, 2022 include a CCB of 2.5% and a SCB of 2.5% for the advanced approaches and standardized approach, respectively, a G-SIB surcharge of 1.0%, and a countercyclical buffer of 0.0%. This results in minimum risk-based ratios of 8.0% for the Common Equity Tier 1 (CET1) capital ratio, 9.5% for the tier 1 capital ratio, and 11.5% for the total capital ratio.

Our current G-SIB surcharge, through December 31, 2023, is 1.0%. Based upon preliminary calculations using data as of December 31, 2022, we currently anticipate that our surcharge will remain at 1% through December 31, 2024; however, that calculation has not yet been finalized and is subject to many financial, balance sheet, market and other factors, and consequently there is a risk that a higher G-SIB surcharge of 1.5% will result from the final calculation.

To maintain the status of the Parent Company as a financial holding company, we and our insured depository institution subsidiaries are required, among other requirements, to be "well capitalized" as defined by Regulation Y and Regulation H.

The market risk capital rule requires us to use internal models to calculate daily measures of VaR, which reflect general market risk for certain of our trading positions defined by the rule as "covered positions," as well as stressed-VaR measures to supplement the VaR measures. The rule also requires a public disclosure composed of qualitative and quantitative information about the market risk associated with our trading activities and our related VaR and stressed-VaR measures. The qualitative and quantitative information required by the rule is provided under "Market Risk Management" included in this Management's Discussion and Analysis.

The following table presents the regulatory capital structure and related regulatory capital ratios for us and State Street Bank as of the dates indicated. We are subject to the more stringent of the risk-based capital ratios calculated under the standardized approach and those calculated under the advanced approaches in the assessment of our capital adequacy under applicable bank regulatory standards.

TABLE 39: REGULATORY CAPITAL STRUCTURE AND RELATED REGULATORY CAPITAL RATIOS

	State Street Corporation				State Street Bank			
(Dollars in millions)	Basel III Advanced Approaches December 31, 2022	Basel III Standardized Approach December 31, 2022	Basel III Advanced Approaches December 31, 2021	Basel III Standardized Approach December 31, 2021	Basel III Advanced Approaches December 31, 2022	Basel III Standardized Approach December 31, 2022	Basel III Advanced Approaches December 31, 2021	Basel III Standardized Approach December 31, 2021
Common shareholders' equity:								
Common stock and related surplus	**$ 11,234**	**$ 11,234**	$ 11,291	$ 11,291	**$ 13,033**	**$ 13,033**	$ 13,047	$ 13,047
Retained earnings	**27,028**	**27,028**	25,238	25,238	**16,975**	**16,975**	15,700	15,700
Accumulated other comprehensive income (loss)	**(3,711)**	**(3,711)**	(1,133)	(1,133)	**(3,428)**	**(3,428)**	(926)	(926)
Treasury stock, at cost	**(11,336)**	**(11,336)**	(10,009)	(10,009)	**—**	**—**	—	—
Total	**23,215**	**23,215**	25,387	25,387	**26,580**	**26,580**	27,821	27,821
Regulatory capital adjustments:								
Goodwill and other intangible assets, net of associated deferred tax liabilities	**(8,545)**	**(8,545)**	(8,935)	(8,935)	**(8,288)**	**(8,288)**	(8,667)	(8,667)
Other adjustments[1]	**(123)**	**(123)**	(505)	(505)	**(19)**	**(19)**	(309)	(309)
Common equity tier 1 capital	**14,547**	**14,547**	15,947	15,947	**18,273**	**18,273**	18,845	18,845
Preferred stock	**1,976**	**1,976**	1,976	1,976	**—**	**—**	—	—
Tier 1 capital	**16,523**	**16,523**	17,923	17,923	**18,273**	**18,273**	18,845	18,845
Qualifying subordinated long-term debt	**1,376**	**1,376**	1,588	1,588	**542**	**542**	752	752
Allowance for credit losses	**—**	**120**	—	108	**—**	**120**	—	108
Total capital	**$ 17,899**	**$ 18,019**	$ 19,511	$ 19,619	**$ 18,815**	**$ 18,935**	$ 19,597	$ 19,705
Risk-weighted assets:								
Credit risk[2]	**$ 61,108**	**$ 105,739**	$ 63,735	$ 109,554	**$ 54,675**	**$ 104,184**	$ 57,405	$ 106,405
Operational risk[3]	**42,763**	**NA**	45,550	NA	**42,325**	**NA**	42,813	NA
Market risk	**1,488**	**1,488**	2,113	2,113	**1,488**	**1,488**	2,113	2,113
Total risk-weighted assets	**$ 105,359**	**$ 107,227**	$ 111,398	$ 111,667	**$ 98,488**	**$ 105,672**	$ 102,331	$ 108,518

Capital Ratios:	2022 Minimum Requirements Including Capital Conservation Buffer and G-SIB Surcharge[4]	2021 Minimum Requirements Including Capital Conservation Buffer and G-SIB Surcharge[4]								
Common equity tier 1 capital	**8.0 %**	8.0 %	**13.8 %**	**13.6 %**	14.3 %	14.3 %	**18.6 %**	**17.3 %**	18.4 %	17.4 %
Tier 1 capital	**9.5**	9.5	**15.7**	**15.4**	16.1	16.1	**18.6**	**17.3**	18.4	17.4
Total capital	**11.5**	11.5	**17.0**	**16.8**	17.5	17.6	**19.1**	**17.9**	19.2	18.2

[1] Other adjustments within CET1 capital include accumulated other comprehensive income (loss) on cash flow hedges that are not recognized at fair value on the balance sheet, the overfunded portion of our defined benefit pension plan obligation net of associated deferred tax liabilities, disallowed deferred tax assets, and other required credit risk-based deductions.

[2] Under the advanced approaches, credit risk RWA includes a CVA which reflects the risk of potential fair value adjustments for credit risk reflected in our valuation of over-the-counter (OTC) derivative contracts. We used a simple CVA approach in conformity with the Basel III advanced approaches.

[3] Under the current advanced approaches rules and regulatory guidance concerning operational risk models, RWA attributable to operational risk can vary substantially from period-to-period, without direct correlation to the effects of a particular loss event on our results of operations and financial condition and impacting dates and periods that may differ from the dates and periods as of and during which the loss event is reflected in our financial statements, with the timing and categorization dependent on the processes for model updates and, if applicable, model revalidation and regulatory review and related supervisory processes. An individual loss event can have a significant effect on the output of our operational RWA under the advanced approaches depending on the severity of the loss event and its categorization among the seven Basel-defined UOMs.

[4] Minimum requirements include a CCB of 2.5% and a SCB of 2.5% for the advanced approaches and the standardized approach, respectively, a G-SIB surcharge of 1.0% and a countercyclical capital buffer of 0%.

NA Not applicable

Our CET1 capital decreased $1.40 billion as of December 31, 2022 compared to December 31, 2021, primarily reflecting lower AOCI from unrealized losses related to AFS securities, largely recognized in the first half of 2022 driven by the significant increase in rates across the yield curve and the resumption of common share repurchases in the fourth quarter of 2022, partially offset by net income. We utilize a hedging program that is designed to minimize volatility in our capital ratios due to impacts of foreign exchange translation on both the numerator (capital) and denominator (RWA and leverage assets). This hedging program, which includes net investment hedging with derivatives, investing in foreign currency and capital repatriation, was generally effective in 2022, contributing to limit the foreign exchange translation impact on CET1 capital ratio. Our Tier 1 capital decreased $1.40 billion as of December 31, 2022 compared to December 31, 2021 under both the advanced approaches and standardized approach, primarily due to the decrease in CET1 capital.

Our Tier 2 capital decreased under the advanced approaches and standardized approach, as of December 31, 2022 compared to December 31, 2021, by $0.21 billion and $0.20 billion, respectively, mainly driven by the maturity of our Tier 2 qualifying debt.

Total capital decreased under the advanced approaches and standardized approach, as of December 31, 2022 compared to December 31, 2021, by $1.61 billion and $1.60 billion, respectively, mainly driven by the decrease in CET1 capital.

The table below presents a roll-forward of CET1 capital, Tier 1 capital and total capital for the years ended December 31, 2022 and 2021.

TABLE 40: CAPITAL ROLL-FORWARD

(In millions)	Basel III Advanced Approaches December 31, 2022	Basel III Standardized Approach December, 31, 2022	Basel III Advanced Approaches December 31, 2021	Basel III Standardized Approach December 31, 2021
Common equity tier 1 capital:				
Common equity tier 1 capital balance, beginning of period	$ 15,947	$ 15,947	$ 14,377	$ 14,377
Net income	2,774	2,774	2,693	2,693
Changes in treasury stock, at cost	(1,327)	(1,327)	600	600
Dividends declared	(984)	(984)	(897)	(897)
Goodwill and other intangible assets, net of associated deferred tax liabilities	390	390	84	84
Accumulated other comprehensive income (loss)[1]	(2,578)	(2,578)	(1,320)	(1,320)
Other adjustments[1]	325	325	410	410
Changes in common equity tier 1 capital	(1,400)	(1,400)	1,570	1,570
Common equity tier 1 capital balance, end of period	14,547	14,547	15,947	15,947
Additional tier 1 capital:				
Tier 1 capital balance, beginning of period	17,923	17,923	16,848	16,848
Changes in common equity tier 1 capital	(1,400)	(1,400)	1,570	1,570
Net issuance (redemption) of preferred stock	—	—	(495)	(495)
Changes in tier 1 capital	(1,400)	(1,400)	1,075	1,075
Tier 1 capital balance, end of period	16,523	16,523	17,923	17,923
Tier 2 capital:				
Tier 2 capital balance, beginning of period	1,588	1,696	962	1,109
Net issuance (redemption) and changes in long-term debt qualifying as tier 2 capital	(212)	(212)	627	627
Changes in allowance for credit losses	—	12	(1)	(40)
Changes in tier 2 capital	(212)	(200)	626	587
Tier 2 capital balance, end of period	1,376	1,496	1,588	1,696
Total capital:				
Total capital balance, beginning of period	19,511	19,619	17,810	17,957
Changes in tier 1 capital	(1,400)	(1,400)	1,075	1,075
Changes in tier 2 capital	(212)	(200)	626	587
Total capital balance, end of period	$ 17,899	$ 18,019	$ 19,511	$ 19,619

[1] Accumulated other comprehensive income (loss) includes losses on cash flow hedges where the hedged exposures are not recognized at fair value on the balance sheet, which, under the Capital Rule, must be excluded from CET1 capital. This adjustment is captured in the Other Adjustments line.

The following table presents a roll-forward of the Basel III advanced approaches and standardized approach RWA for the years ended December 31, 2022 and 2021.

TABLE 41: ADVANCED & STANDARDIZED APPROACHES RISK-WEIGHTED ASSETS ROLL-FORWARD

(In millions)	Basel III Advanced Approaches December 31, 2022	Basel III Advanced Approaches December 31, 2021	Basel III Standardized Approach December 31, 2022	Basel III Standardized Approach December 31, 2021
Total risk-weighted assets, beginning of period	**$ 111,398**	$ 109,705	**$ 111,667**	$ 117,080
Changes in credit risk-weighted assets:				
Net increase (decrease) in investment securities-wholesale	**(4,850)**	(476)	**(3,591)**	(707)
Net increase (decrease) in loans	**(3,054)**	2,017	**(5,387)**	946
Net increase (decrease) in securitization exposures	**(5)**	(404)	**(5)**	(489)
Net increase (decrease) in repo-style transaction exposures	**(1,420)**	(440)	**(5,157)**	(1,658)
Net increase (decrease) in over-the-counter derivatives exposures[1]	**2,161**	(1,353)	**6,295**	(863)
Net increase (decrease) in all other[2]	**4,541**	1,024	**4,030**	(2,567)
Net increase (decrease) in credit risk-weighted assets	**(2,627)**	368	**(3,815)**	(5,338)
Net increase (decrease) in market risk-weighted assets	**(625)**	(75)	**(625)**	(75)
Net increase (decrease) in operational risk-weighted assets	**(2,787)**	1,400	**N/A**	N/A
Total risk-weighted assets, end of period	**$ 105,359**	$ 111,398	**$ 107,227**	$ 111,667

[1] Under the advanced approaches, includes CVA RWA.
[2] Includes assets not in a definable category, non-material portfolio, cleared transactions, other wholesale, cash and due from banks, interest-bearing deposits with banks and equity exposures.
NA Not applicable.

As of December 31, 2022, total advanced approaches RWA decreased $6.04 billion compared to December 31, 2021, mainly driven by a decrease in operational risk and credit risk RWA. The decrease in operational risk RWA was primarily due to a decrease in the frequency of certain operational loss events. The decrease in credit risk RWA was primarily driven by a net decrease in wholesale investment securities, loans, and repo-style transactions RWA, partially offset by an increase in all other and OTC derivatives RWA.

As of December 31, 2022, total standardized approach RWA decreased $4.44 billion compared to December 31, 2021, mainly driven by a decrease in credit risk RWA. The decrease in credit risk RWA was primarily driven by a net decrease in loans, repo-style transactions, and wholesale investment securities RWA, partially offset by an increase in OTC derivatives and all other RWA.

The regulatory capital ratios as of December 31, 2022, presented in Table 39: Regulatory Capital Structure and Related Regulatory Capital Ratios, are calculated under the advanced approaches and standardized approach in conformity with the Basel III final rule. The advanced approaches based ratios reflect calculations and determinations with respect to our capital and related matters as of December 31, 2022, based on our and external data, quantitative formulae, statistical models, historical correlations and assumptions, collectively referred to as "advanced systems," in effect and used by us for those purposes as of the time we first reported such ratios in a quarterly report on Form 10-Q or an annual report on Form 10-K. Significant components of these advanced systems involve the exercise of judgment by us and our regulators, and our advanced systems may not, individually or collectively, precisely represent or calculate the scenarios, circumstances, outputs or other results for which they are designed or intended.

Our advanced systems are subject to update and periodic revalidation in response to changes in our business activities and our historical experiences, forces and events experienced by the market broadly or by individual financial institutions, changes in regulations and regulatory interpretations and other factors, and are also subject to continuing regulatory review and approval. For example, a significant operational loss experienced by another financial institution, even if we do not experience a related loss, could result in a material change in the output of our advanced systems and a corresponding material change in our risk exposures, our total RWA, and our capital ratios compared to prior periods. An operational loss that we experience could also result in a material change in our capital requirements for operational risk under the advanced approaches, depending on the severity of the loss event, its characterization among the seven Basel-defined UOM, and the stability of the distributional approach for a particular UOM, and without direct correlation to the effects of the loss event, or the timing of such effects, on our results of operations.

Due to the influence of changes in these advanced systems, whether resulting from changes in data inputs, regulation or regulatory supervision or interpretation, specific to us or market activities or experiences or other updates or factors, we expect that our advanced systems and our capital ratios calculated in conformity with the Basel III final rule will change and may be volatile over time, and that those latter changes or volatility could be material as calculated and measured from period to period. We and State Street Bank are subject to further regulatory guidance, action, and rule-making.

Tier 1 and Supplementary Leverage Ratios

We are subject to a minimum Tier 1 leverage ratio and a supplementary leverage ratio. The Tier 1 leverage ratio is based on Tier 1 capital and adjusted quarterly average on-balance sheet assets. The Tier 1 leverage ratio differs from the SLR primarily in that the denominator of the Tier 1 leverage ratio is a quarterly average of on-balance sheet assets, while the SLR additionally includes off-balance sheet exposures. We must maintain a minimum Tier 1 leverage ratio of 4%.

We are also subject to a minimum SLR of 3%, and as a U.S. G-SIB, we must maintain a 2% SLR buffer in order to avoid any limitations on distributions to shareholders and discretionary bonus payments to certain executives. If we do not maintain this buffer, limitations on these distributions and discretionary bonus payments would be increasingly stringent based upon the extent of the shortfall.

TABLE 42: TIER 1 AND SUPPLEMENTARY LEVERAGE RATIOS

(Dollars in millions)	December 31, 2022	December 31, 2021
State Street:		
Tier 1 capital	**$ 16,523**	$ 17,923
Average assets	**284,346**	303,007
Less: adjustments for deductions from tier 1 capital and other	**(8,668)**	(9,440)
Adjusted average assets for Tier 1 leverage ratio	**275,678**	293,567
Additional SLR exposure	**40,126**	32,985
Adjustments for deductions of qualifying central bank deposits	**(78,455)**	(84,113)
Total assets for SLR	**$ 237,349**	$ 242,439
Tier 1 leverage ratio[1]	**6.0 %**	6.1 %
Supplementary leverage ratio	**7.0**	7.4
State Street Bank[2]:		
Tier 1 capital	**$ 18,273**	$ 18,845
Average assets	**281,527**	299,379
Less: adjustments for deductions from tier 1 capital and other	**(8,307)**	(8,976)
Adjusted average assets for Tier 1 leverage ratio	**273,220**	290,403
Additional SLR exposure	**42,043**	32,985
Adjustments for deductions of qualifying central bank deposits	**(78,455)**	(84,113)
Total assets for SLR	**$ 236,808**	$ 239,275
Tier 1 leverage ratio [1]	**6.7 %**	6.5 %
Supplementary leverage ratio	**7.7**	7.9

[1] Tier 1 leverage ratios were calculated in conformity with the Basel III final rule.

[2] The SLR rule requires that, as of January 1, 2018, (i) State Street Bank maintains an SLR of at least 6.0% to be well capitalized under the U.S. banking regulators' Prompt Corrective Action Framework and (ii) we maintain an SLR of at least 5.0% to avoid limitations on capital distributions and discretionary bonus payments. In addition to the SLR, State Street Bank is subject to a well capitalized Tier 1 leverage ratio requirement of 5.0%.

Total Loss-Absorbing Capacity (TLAC)

The Federal Reserve's final rule on TLAC, LTD and clean holding company requirements for U.S. domiciled G-SIBs, such as us, is intended to improve the resiliency and resolvability of certain U.S. banking organizations through enhanced prudential standards, and requires us, among other things, to comply with minimum requirements for external TLAC (combined eligible tier 1 regulatory capital and LTD) and LTD. Specifically, we must hold:

	Amount equal to:
External TLAC	Greater of: • 21.5% of total RWA (18.0% minimum plus 2.5% plus a G-SIB surcharge calculated for these purposes under Method 1 of 1.0% plus any applicable counter- cyclical buffer, which is currently 0%); and • 9.5% of total leverage exposure (7.5% minimum plus the SLR buffer of 2.0%), as defined by the SLR final rule.
Qualifying external LTD	Greater of: • 7.0% of RWA (6.0% minimum plus a G-SIB surcharge calculated for these purposes under method 2 of 1.0%); and • 4.5% of total leverage exposure, as defined by the SLR final rule.

As of April 1, 2020, the TLAC and LTD requirements calibrated to the SLR denominator reflect the deduction of certain central bank balances as prescribed by the regulatory relief implemented under the EGRRCPA.

The following table presents external LTD and external TLAC as of December 31, 2022.

TABLE 43: TOTAL LOSS-ABSORBING CAPACITY

	As of December 31, 2022			
(Dollars in millions)	Actual		Requirement	
Total loss-absorbing capacity:				
Risk-weighted assets	**$ 29,676**	**27.7 %**	**$ 23,054**	**21.5 %**
Total leverage exposure	**29,676**	**12.5**	**22,548**	**9.5**
Long-term debt:				
Risk-weighted assets	**12,403**	**11.6**	**7,506**	**7.0**
Total leverage exposure	**12,403**	**5.2**	**10,681**	**4.5**

Additional information about TLAC is provided under "Total Loss-Absorbing Capacity" in "Supervision and Regulation" in Business in this Form 10-K.

Regulatory Developments

In April 2018, the Federal Reserve issued a proposed rule which would replace the current 2.0% SLR buffer for G-SIBs, with a buffer equal to 50% of their G-SIB surcharge. This proposal would also make conforming modifications to our TLAC and eligible LTD requirements applicable to G-SIBs. At this point in time, it is unclear whether this proposal will be implemented as proposed.

In November 2019, the Federal Reserve and other U.S. federal banking agencies issued a final rule that, among other things, implemented the SA-CCR, a methodology for calculating the exposure amount for derivative contracts. Under the final rule, which became effective on January 1, 2022, we have the option to use the SA-CCR or the IMM to measure the exposure amount of our cleared and uncleared derivative transactions under our advanced approaches calculation. We have elected to use the SA-CCR for purposes of our advanced approach capital calculations. We are required to determine the amount of these exposures using the SA-CCR under our standardized approach capital calculation. Additionally, we have to apply a revised formula to determine the RWA amount of our central counterparty default fund contributions.

On March 4, 2020, the U.S. federal banking agencies issued the SCB final rule that replaces, under the standardized approach, the capital conservation buffer (2.5%) with a SCB calculated as the difference between an institution's starting and lowest projected CET1 ratio under the CCAR severely adverse scenario plus planned common stock dividend payments (as a percentage of RWA) from the fourth through seventh quarter of the CCAR planning horizon.

The Federal Reserve and other U.S. federal banking agencies issued an interim final rule effective in March 2020 and later finalized on a permanent basis on August 26, 2020, which revised the definition of eligible retained income for all U.S. banking organizations. The revised definition of eligible retained income makes any automatic limitations on capital distributions, where a banking organization's regulatory ratios were to decline below the respective minimum requirements, take effect on a more gradual basis.

Effective April 1, 2020, the Federal Reserve and other U.S. federal banking agencies adopted a final rule under EGRRCPA that establishes a deduction for qualifying central bank deposits from a custodial banking organization's total leverage exposure equal to the lesser of (i) the total amount of funds the custodial banking organization and its consolidated subsidiaries have on deposit at qualifying central banks and (ii) the total amount of client funds on deposit at the custodial banking organization that are linked to fiduciary or custodial and safekeeping accounts. For the quarter ended December 31, 2022, we deducted $78.5 billion of average balances held on deposit at central banks from the denominator used in the calculation of our SLR, based on this custodial banking deduction.

On October 20, 2020, the Federal Reserve and other U.S. federal banking agencies issued a final rule that requires us and State Street Bank to make certain deductions from regulatory capital for investments in certain unsecured debt instruments, including eligible LTD under the TLAC rule, issued by the Parent Company and other U.S. and foreign G-SIBs. The final rule became effective on April 1, 2021.

On June 23, 2022, we were notified by the Federal Reserve of the results from the 2022 supervisory stress test. Our SCB calculated under this supervisory stress test was well below the 2.5% minimum, resulting in an SCB at that floor, which was effective starting October 1, 2022 and will run through September 30, 2023.

On September 7, 2022, the Federal Reserve's Vice Chair For Supervision stated that the Federal Reserve was undertaking a holistic review of U.S. capital requirements that will help the regulator consider adjustments to the current framework. In addition, on September 9, 2022, the U.S. Banking Agencies reaffirmed their commitment to implementing revised regulatory capital requirements that align with the final set of Basel III standards (Basel IV package) issued by the Basel Committee on Banking Supervision in December 2017. They intend to seek public comments on a joint proposed rule in the coming months.

For additional information about regulatory developments, refer to the "Regulatory Capital Adequacy and Liquidity Standards" section of "Supervision and Regulation" in Business in this Form 10-K.

Capital Actions

Preferred Stock

The following table summarizes selected terms of each of the series of the preferred stock issued and outstanding as of December 31, 2022:

TABLE 44: PREFERRED STOCK ISSUED AND OUTSTANDING

Preferred Stock[1]:	Issuance Date	Depositary Shares Issued	Amount outstanding (in millions)	Ownership Interest Per Depositary Share	Liquidation Preference Per Share	Liquidation Preference Per Depositary Share	Per Annum Dividend Rate	Dividend Payment Frequency	Carrying Value as of December 31, 2022 (In millions)	Redemption Date[2]
Series D[3]	February 2014	30,000,000	$ 750	1/4,000th	$ 100,000	$ 25	5.90% to but excluding March 15, 2024, then a floating rate equal to the three-month LIBOR plus 3.108%	Quarterly: March, June, September and December	$ 742	March 15, 2024
Series F[4][5]	May 2015	250,000	250	1/100th	100,000	1,000	5.25% to but excluding September 15, 2020, then a floating rate equal to the three-month LIBOR plus 3.597%, or 8.366% effective December 15, 2022	Quarterly: March, June, September and December	247	September 15, 2020
Series G[6]	April 2016	20,000,000	500	1/4,000th	100,000	25	5.35% to but excluding March 15, 2026, then a floating rate equal to the three-month LIBOR plus 3.709%	Quarterly: March, June, September and December	493	March 15, 2026
Series H[7]	September 2018	500,000	500	1/100th	100,000	1,000	5.625% to but excluding December 15, 2023, then a floating rate equal to the three-month LIBOR plus 2.539%	Semi-annually: June and December	494	December 15, 2023

[1] The preferred stock and corresponding depositary shares may be redeemed at our option in whole, but not in part, prior to the redemption date upon the occurrence of a regulatory capital treatment event, as defined in the certificate of designation, at a redemption price equal to the liquidation price per share and liquidation price per depositary share plus any declared and unpaid dividends, without accumulation of any undeclared dividends.

[2] On the redemption date, or any dividend payment date thereafter, the preferred stock and corresponding depositary shares may be redeemed by us, in whole or in part, at the liquidation price per share and liquidation price per depositary share plus any declared and unpaid dividends, without accumulation of any undeclared dividends.

[3] The dividend rate for the floating rate period of the Series D preferred stock that begins on March 15, 2024 and all subsequent floating rate periods will transition to a new, fixed rate in accordance with the LIBOR Act and the contractual terms of the Series D preferred stock.

[4] Series F preferred stock is redeemable on September 15, 2020 and on each succeeding dividend payment date.

[5] In accordance with the LIBOR Act, the benchmark interest rate used to calculate the dividend rate of the Series F preferred stock issued and outstanding will transition from LIBOR to CME Term SOFR, plus 0.26161%, beginning with the September 15, 2023 dividend period.

[6] The dividend rate for the floating rate period of the Series G preferred stock that begins on March 15, 2026 and all subsequent floating rate periods will remain at the current fixed rate in accordance with the LIBOR Act and the contractual terms of the Series G preferred stock.

[7] In accordance with the LIBOR Act, the benchmark interest rate to be used to calculate the dividend rate during the floating rate period of the Series H preferred stock that begins on December 15, 2023 will transition from LIBOR to CME Term SOFR, plus 0.26161%.

On March 15, 2021, we redeemed an aggregate of $500 million, or 5,000 of the 7,500 outstanding shares of our non-cumulative perpetual preferred stock, Series F, for cash at a redemption price of $100,000 per share (equivalent to $1,000 per depositary share) plus all declared and unpaid dividends.

The following table presents the dividends declared for each of the series of preferred stock issued and outstanding for the periods indicated:

TABLE 45: PREFERRED STOCK DIVIDENDS

	Years Ended December 31,					
	2022			2021		
(Dollars in millions, except per share amounts)	Dividends Declared per Share	Dividends Declared per Depositary Share	Total	Dividends Declared per Share	Dividends Declared per Depositary Share	Total
Preferred Stock:						
Series D	**$ 5,900**	**$ 1.48**	**$ 44**	$ 5,900	$ 1.48	$ 44
Series F	**5,208**	**52.08**	**13**	3,808	38.08	15
Series G	**5,352**	**1.32**	**27**	5,352	1.32	27
Series H	**5,625**	**56.25**	**28**	5,625	56.25	28
Total			**$ 112**			$ 114

Common Stock

In July 2021, our Board approved a share repurchase program authorizing the purchase of up to $3.0 billion of our common stock through the end of 2022. We did not repurchase any common stock during the first three quarters of 2022. In October 2022, we resumed our share repurchases and purchased $1.5 billion of our common stock in the fourth quarter of 2022 under the 2021 Program. In January 2023, our Board approved a share repurchase program authorizing the purchase of up to $4.5 billion of our common stock through December 31, 2023.

The table below presents the activity under our common share repurchase program for the period indicated:

TABLE 46: SHARES REPURCHASED

	Year Ended December 31,		
	2022		
	Shares Acquired (In millions)	Average Cost per Share	Total Acquired (In millions)
2021 Program	**19.5**	**$ 76.81**	**$ 1,500**

The table below presents the dividends declared on common stock for the periods indicated:

TABLE 47: COMMON STOCK DIVIDENDS

	Years Ended December 31,			
	2022		2021	
	Dividends Declared per Share	Total (In millions)	Dividends Declared per Share	Total (In millions)
Common Stock	**$ 2.40**	**$ 871**	$ 2.18	$ 779

Federal and state banking regulations place certain restrictions on dividends paid by subsidiary banks to the parent holding company. In addition, banking regulators have the authority to prohibit bank holding companies from paying dividends. For information concerning limitations on dividends from our subsidiary banks, refer to "Related Stockholder Matters" included under Item 5, Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities, and to Note 15 to the consolidated financial statements in this Form 10-K. Our common stock and preferred stock dividends, including the declaration, timing and amount thereof, are subject to consideration and approval by the Board at the relevant times.

Stock purchases under our common share repurchase program may be made using various types of transactions, including open market purchases, accelerated share repurchases or other transactions off the market, and may be made under Rule 10b5-1 trading programs. The timing and amount of any stock purchases and the type of transaction may not be ratable over the duration of the program, may vary from reporting period to reporting period and will depend on several factors, including our capital position and our financial performance, investment opportunities, market conditions, the nature and timing of implementation of revisions to the Basel III framework and the amount of common stock issued as part of employee compensation programs. The common share repurchase program does not have specific price targets and may be suspended at any time.

OFF-BALANCE SHEET ARRANGEMENTS

On behalf of clients enrolled in our securities lending program, we lend securities to banks, broker/dealers and other institutions. In most circumstances, we indemnify our clients for the fair market value of those securities against a failure of the borrower to return such securities. Though these transactions are collateralized, the substantial volume of these activities necessitates detailed credit-based underwriting and monitoring processes. The aggregate amount of indemnified securities on loan totaled $348.92 billion and $385.74 billion as of December 31, 2022 and 2021, respectively. We require the borrower to provide collateral in an amount in excess of 100% of the fair market value of the securities borrowed. We hold the collateral received in connection with these securities lending services as agent, and the collateral is not recorded in our consolidated statement of condition. We revalue the securities on loan and the collateral daily to determine if additional collateral is necessary or if excess collateral is required to be returned to the borrower. We held, as agent, cash and securities totaling $366.90 billion and $404.12 billion as collateral for indemnified securities on loan as of December 31, 2022 and 2021, respectively.

The cash collateral held by us as agent is invested on behalf of our clients. In certain cases, the cash collateral is invested in third-party repurchase agreements, for which we indemnify the client against loss of the principal invested. We require the counterparty to the indemnified repurchase agreement to provide collateral in an amount in excess of 100% of the amount of the repurchase agreement. In our role as agent, the indemnified repurchase agreements and the related collateral held by us are not recorded in our consolidated statement of condition. Of the collateral of $366.90 billion and $404.12 billion, referenced above, $54.11 billion and $61.56 billion was invested in indemnified repurchase agreements as of December 31, 2022 and 2021, respectively. We or our agents held $57.90 billion and $67.01 billion as collateral for indemnified investments in repurchase agreements as of December 31, 2022 and 2021, respectively.

Additional information about our securities finance activities and other off-balance sheet arrangements is provided in Notes 10, 12 and 14 to the consolidated financial statements in this Form 10-K.

SIGNIFICANT ACCOUNTING ESTIMATES

Our consolidated financial statements are prepared in conformity with U.S. GAAP, and we apply accounting policies that affect the determination of amounts reported in the consolidated financial statements.

Certain of our accounting policies, by their nature, require management to make judgments, involving significant estimates and assumptions, about the effects of matters that are inherently uncertain. These estimates and assumptions are based on information available as of the date of the consolidated financial statements, and changes in this information over time could materially affect the amounts of assets, liabilities, equity, revenue and expenses reported in subsequent consolidated financial statements.

Based on the sensitivity of reported financial statement amounts to the underlying estimates and assumptions, the more significant accounting policies identified by management are:

- Recurring fair value measurements;
- Allowance for credit losses;
- Impairment of goodwill and other intangible assets; and
- Contingencies.

These policies require the most subjective or complex judgments, and underlying estimates and assumptions could be most subject to revision as new information becomes available. An understanding of the judgments, estimates and assumptions underlying these accounting policies is essential to the understanding of our reported results of operations and financial condition.

The following is a discussion of the above-mentioned significant accounting estimates. Additional information on our significant accounting policies, including references to applicable footnotes, is provided in Note 1 to the consolidated financial statements in this Form 10-K.

Fair Value Measurements

We carry certain of our financial assets and liabilities at fair value in our consolidated financial statements on a recurring basis, including trading account assets and liabilities, AFS debt securities, certain equity securities and various types of derivative financial instruments.

Changes in the fair value of these financial assets and liabilities are recorded either as components of our consolidated statement of income or as components of other comprehensive income within shareholders' equity in our consolidated statement of condition. In addition to those financial assets and liabilities that we carry at fair value in our consolidated financial statements on a recurring basis, we estimate the fair values of other financial assets and liabilities that we carry at amortized cost in our consolidated statement of condition, and we disclose these fair value estimates in the notes to our consolidated financial statements. We estimate the

fair values of these financial assets and liabilities using the definition of fair value described below.

U.S. GAAP defines fair value as the price that would be received to sell an asset or paid to transfer a liability in the principal or most advantageous market for an asset or liability in an orderly transaction between market participants on the measurement date. When we measure fair value for our financial assets and liabilities, we consider the principal or the most advantageous market in which we would transact; we also consider assumptions that market participants would use when pricing the asset or liability. When possible, we look to active and observable markets to measure the fair value of identical, or similar, financial assets and liabilities. When identical financial assets and liabilities are not traded in active markets, we look to market-observable data for similar assets and liabilities. In some instances, certain assets and liabilities are not actively traded in observable markets; as a result, we use alternate valuation techniques to measure their fair value.

We categorize the financial assets and liabilities that we carry at fair value in our consolidated statement of condition on a recurring basis based on U.S. GAAP's prescribed three-level valuation hierarchy. The hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (level 1) and the lowest priority to valuation methods using significant unobservable inputs (level 3).

With respect to derivative instruments, we evaluate the fair value impact of the credit risk of our counterparties. We consider such factors as the market-based probability of default by our counterparties, and our current and expected potential future net exposures by remaining maturities, in determining the appropriate measurements of fair value.

Additional information with respect to the assets and liabilities carried by us at fair value on a recurring basis is provided in Note 2 to the consolidated financial statements in this Form 10-K.

Allowance for Credit Losses

We record an allowance for credit losses related to certain on-balance sheet credit exposures, including our financial assets held at amortized cost, as well as certain off-balance sheet credit exposures, including unfunded commitments and letters of credit.

Determining the appropriateness of the allowance is complex and requires judgment by management about the effect of matters that are inherently uncertain. In future periods, factors and forecasts then prevailing may result in significant changes in the allowance for credit losses in those future periods. We estimate credit losses over the contractual life of the financial asset while factoring in prepayment activity where supported by data over a three year reasonable and supportable forecast period. We utilize baseline, upside and downside scenarios that are applied based on a probability weighting, in order to better reflect management's expectation of expected credit losses given existing market conditions and the changes in the economic environment. The multiple scenarios are based on a three year horizon (or less depending on contractual maturity) and then revert linearly over a two year period to a ten-year historical average thereafter. The contractual term excludes expected extensions, renewals and modifications, but includes prepayment assumptions where applicable.

Our allowance for credit losses is sensitive to a number of inputs, including macroeconomic forecast assumptions and credit rating migrations during the period. Our macroeconomic forecasts used in determining the December 31, 2022 allowance for credit losses consisted of three scenarios reflecting contractions in GDP and rising unemployment of varying severity, with the baseline scenario generally in line with market consensus of economic forecasts for GDP and unemployment. We placed the most weight on our baseline scenario, with the remaining weighting split equally between the upside and downside scenarios.

Keeping all other factors constant, we estimate that if we had applied 100% weighting to the downside scenario, the allowance for credit losses as of December 31, 2022 would have been approximately $67 million higher. This estimate is intended to reflect the sensitivity of the allowance for credit losses to changes in our scenario weights and is not intended to be indicative of future changes in the allowance for credit losses.

Additional information about our allowance for credit losses is provided in Notes 3 and 4 to the consolidated financial statements in this Form 10-K.

Goodwill and Other Intangible Assets

Goodwill represents the excess of the cost of an acquisition over the fair value of the net tangible and other intangible assets acquired at the acquisition date. Other intangible assets represent purchased long-lived intangible assets, primarily client relationships, core deposit intangible assets and technology that can be distinguished from goodwill because of contractual rights or because the asset can be exchanged on its own or in combination with a related contract, asset or liability. Other intangible assets are initially measured at their acquisition date fair value, the determination of which requires management judgment. Goodwill is not amortized, while other intangible assets are amortized over their estimated useful lives.

Management reviews goodwill for impairment annually or more frequently if circumstances arise or events occur that indicate an impairment of the carrying amount may exist. We begin our review by first assessing qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. Events that may indicate impairment include: significant or adverse changes in the business, economic or political climate; an adverse action or assessment by a regulator; unanticipated competition; and a more-likely-than-not expectation that we will sell or otherwise dispose of a business to which the goodwill or other intangible assets relate. If we conclude from the qualitative assessment of goodwill impairment that it is more likely than not that a reporting unit's fair value is greater than its carrying amount, quantitative tests are not required. However, if we determine it is more likely than not that a reporting unit's fair value is less than its carrying amount, then we complete a quantitative assessment to determine if there is goodwill impairment. We may elect to bypass the qualitative assessment and complete a quantitative assessment in any given year.

In 2022, we assessed goodwill for impairment using a qualitative assessment. Based on our evaluation of the qualitative factors noted above, we determined that it was more likely than not that the fair value of each of the reporting units exceeded its respective carrying amount. We determined there was no goodwill impairment in 2022.

Other intangible assets are supported by the future cash flows that are directly associated with and expected to arise as a direct result of the use of the intangible asset, less any costs associated with the intangible asset's eventual disposition. We evaluate other intangible assets for impairment at the lowest level for which there are identifiable cash flows that are largely independent of the cash flows from other groups of assets using the following process. First, we routinely assess whether impairment indicators are present. When impairment indicators are identified as being present, we compare the estimated future net undiscounted cash flows of the intangible asset with its carrying value. If the future net undiscounted cash flows are greater than the carrying value, then there is no impairment, but if the intangible asset's net undiscounted cash flows are less than its carrying value, we are required to calculate impairment. An impairment is recognized by writing the intangible asset down to its fair value. We evaluate intangible assets for indicators of impairment on a quarterly basis. There were no impairments taken on other intangible assets in 2022.

Additional information about goodwill and other intangible assets, including information by line of business, is provided in Note 5 to the consolidated financial statements in this Form 10-K.

Contingencies

Information on significant estimates and judgments related with establishing litigation reserves is discussed in Note 13 of the consolidated financial statements in this Form 10-K.

RECENT ACCOUNTING DEVELOPMENTS

Information with respect to recent accounting developments is provided in Note 1 to the consolidated financial statements in this Form 10-K.

OTHER MATTERS

Replacement of Interbank Offered Rates including LIBOR

On March 5, 2021, the Intercontinental Exchange Benchmark Administration (IBA) announced, in conjunction with the United Kingdom Financial Conduct Authority (FCA), that it would cease the publication of all EUR and Swiss Franc LIBOR settings, the overnight, one week, two week, two month and twelve month GBP LIBOR and Japanese yen (JPY) LIBOR settings, and the one week and two month USD LIBOR settings, as of December 31, 2021. Furthermore, the IBA announced that as of June 30, 2023, it would cease the publication of the overnight and twelve month USD LIBOR settings and that as of June 30, 2023 the one month, three month and six month USD LIBOR settings would become non-representative.

On September 29, 2021, the FCA announced that it would compel the IBA to continue the publication of the one month, three month and six month GBP and JPY LIBOR settings, on a synthetic, non-representative basis from year-end 2021 for a period of at least one year. On June 30, 2022, the FCA issued a consultation on winding down synthetic tenors of GBP LIBOR and on the potential introduction of a synthetic version of certain USD LIBOR settings as of June 30, 2023. On September

29, 2022, the FCA confirmed the cessation of all synthetic JPY LIBOR settings as of December 31, 2022, and the cessation of the one month and six month synthetic GBP LIBOR settings as of March 30, 2023. On November 23, 2022, the FCA issued a proposal to compel publication of a synthetic version of the one month, three month and six month USD LIBOR settings until September 30, 2024, while also confirming that the publication of a synthetic version of the three month GBP LIBOR setting would end as of March 30, 2024. A final decision from the FCA on the status of a synthetic version of the one month, three month and six month USD LIBOR settings beyond June 30, 2023 is expected in early 2023.

On March 15, 2022, the U.S. Congress adopted, as part of the Consolidated Appropriation Act of 2022, the Adjustable Interest Rate (LIBOR) Act which provides certain statutory requirements and guidance for the selection and use of alternative reference rates in legacy financial contracts governed by U.S. law that do not provide for the use of a clearly defined or practicable alternative reference rate. On July 19, 2022, the Federal Reserve issued a notice of proposed rulemaking on a proposal to implement the LIBOR Act, as required by its terms. On December 16, 2022, the Federal Reserve adopted a final rule implementing the LIBOR Act. The final rule is effective February 27, 2023.

We have established a process to identify, assess, plan for and remediate the use of LIBOR and other reference rates affected by reference rate reform that addresses both direct exposures on our balance sheet, and, more importantly, the use of LIBOR in our various service provider roles to our customers.

This process is led by a multidisciplinary LIBOR program management office (LIBOR PMO), established in September 2018. The LIBOR PMO will continue to drive firm-wide results throughout 2023. The LIBOR PMO reports regularly to executive management of the firm, and our key regulators, on progress with respect to the adoption of alternative reference rates for various financial products and services, client communications, updating of our quantitative models and information technology systems, managing third-party vendors, contracts remediation, evaluation of fallback provisions contained in LIBOR-priced loans, investment securities, derivatives and long-term debt and general operational readiness for each stage of the transition.

Most of the LIBOR PMO's work for implementation of the transition to alternate reference rates is substantially complete, and contingency plans have been developed with respect to identified uncertainties. No incremental material investments are expected to be needed for systems and processes related to the transition. Potential risks that could impact our remediation efforts include overall transition readiness across the industry, third-party vendor dependencies and resource constraints from the concentration of remediation activities at key points in the transition process.

Our direct on-balance sheet exposures to LIBOR are limited and primarily include assets held in the investment portfolio, certain loans made through Global Credit Finance and issuances of long-term debt and preferred stock. We have planned for, and are prepared to transition, our remaining balance sheet exposures in a manner consistent with regulatory guidance and the availability of interim solutions for various legacy LIBOR contracts. We will not originate or issue new LIBOR-based loans or long-term debt, and any purchases of LIBOR-based investment securities will be screened for adequate fallback language. Our remaining exposure outstanding at the end of June 2023 is largely governed by existing fallback language or the LIBOR Act which provides for appropriate fallback provisions. Substantial risks and uncertainties are associated with the market transition away from the use of LIBOR as an interest rate benchmark in financial instruments and contracts. Our financial performance depends, in part, on our ability to adapt to market changes promptly, while avoiding increased related expenses or operational errors.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The information provided under “Market Risk Management” in "Financial Condition" in our Management's Discussion and Analysis in this Form 10-K, is incorporated by reference herein.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Additional information about restrictions on the transfer of funds from State Street Bank to the Parent Company is provided under "Related Stockholder Matters" in Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities, and under "Capital" in “Financial Condition” in our Management’s Discussion and Analysis in this Form 10-K.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of State Street Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated statements of condition of State Street Corporation (the “Corporation”) as of December 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, changes in shareholders’ equity, and cash flows for each of the three years in the period ended December 31, 2022, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Corporation at December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Corporation's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 16, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

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

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

Critical Audit Matter

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

Servicing Fee Revenue

Description of the Matter

Revenue recognized by the Corporation as servicing fees was $5.1 billion for the year ended December 31, 2022. As disclosed in Notes 24 and 25 of the consolidated financial statements, servicing fee revenue involves revenue streams from various products which include custody, accounting, regulatory reporting, investor services, IBOR, transaction management, cash, record keeping, client reporting, and investment manager and alternative investment manager operations outsourcing. The Corporation's servicing fee revenue involves a significant volume of contracts and transactions and is sourced from multiple systems and processes across different business teams and geographies.

Auditing servicing fee revenue was complex and involved significant audit effort due to the non-standard nature of the Corporation's contracts, the volume of contracts, and the number of different processes used to recognize revenue.

How We Addressed the Matter in Our Audit

We identified and obtained an understanding of the processes used by the Corporation to recognize revenue transactions. We evaluated the design and tested the operating effectiveness of controls over the Corporation's processes for recognizing servicing fee revenue, including, among others, controls over the review of client contracts, the calculations of the key drivers of revenue (e.g., assets under custody) and the flow of this information from the business teams to the department accruing revenue.

Among other procedures, to test servicing fee revenue, we selected and analyzed a sample of client contracts to determine whether terms that may have an impact on revenue recognition, including performance obligations and specified fees, were identified and properly considered in the evaluation of the accounting for the contracts. In addition, we reperformed the calculation of revenue for a sample of revenue transactions. We also agreed the amounts recognized to source documents and tested the mathematical accuracy of the recorded revenue. We obtained third party confirmation of the client balance due for a sample of servicing fees receivable.

/s/ Ernst & Young LLP

We have served as the Corporation's auditor since 1972.

Boston, Massachusetts
February 16, 2023

STATE STREET CORPORATION
CONSOLIDATED STATEMENT OF INCOME

(Dollars in millions, except per share amounts)	Years Ended December 31, 2022	2021	2020
Fee revenue:			
Servicing fees	**$ 5,087**	$ 5,531	$ 5,157
Management fees	**1,939**	2,053	1,880
Foreign exchange trading services	**1,376**	1,211	1,363
Securities finance	**416**	416	356
Software and processing fees	**789**	738	685
Other fee revenue	**(1)**	63	58
Total fee revenue	**9,606**	10,012	9,499
Net interest income:			
Interest income	**4,088**	1,908	2,575
Interest expense	**1,544**	3	375
Net interest income	**2,544**	1,905	2,200
Other income:			
Gains (losses) from sales of available-for-sale securities, net	**(2)**	57	4
Other income	**—**	53	—
Total other income	**(2)**	110	4
Total revenue	**12,148**	12,027	11,703
Provision for credit losses	**20**	(33)	88
Expenses:			
Compensation and employee benefits	**4,428**	4,554	4,450
Information systems and communications	**1,630**	1,661	1,550
Transaction processing services	**971**	1,024	978
Occupancy	**394**	444	489
Acquisition and restructuring costs	**65**	65	50
Amortization of other intangible assets	**238**	245	234
Other	**1,075**	896	965
Total expenses	**8,801**	8,889	8,716
Income before income tax expense	**3,327**	3,171	2,899
Income tax expense	**553**	478	479
Net income	**$ 2,774**	$ 2,693	$ 2,420
Net income available to common shareholders	**$ 2,660**	$ 2,572	$ 2,257
Earnings per common share:			
Basic	**$ 7.28**	$ 7.30	$ 6.40
Diluted	**7.19**	7.19	6.32
Average common shares outstanding (in thousands):			
Basic	**365,214**	352,565	352,865
Diluted	**370,109**	357,962	357,106
Cash dividends declared per common share	**$ 2.40**	$ 2.18	$ 2.08

The accompanying notes are an integral part of these consolidated financial statements.

STATE STREET CORPORATION
CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

(In millions)	Years Ended December 31, 2022	2021	2020
Net income	**$ 2,774**	$ 2,693	$ 2,420
Other comprehensive income (loss), net of related taxes:			
Foreign currency translation, net of related taxes of $47, $86 and ($40), respectively	**(441)**	(413)	488
Net unrealized gains (losses) on investment securities, net of reclassification adjustment and net of related taxes of ($650), ($338) and $166, respectively	**(1,767)**	(896)	439
Net unrealized gains (losses) on cash flow hedges, net of related taxes of ($133), ($24) and $46, respectively	**(357)**	(59)	127
Net unrealized gains (losses) on retirement plans, net of related taxes of ($1), $16 and $3, respectively	**(13)**	48	9
Other comprehensive income (loss)	**(2,578)**	(1,320)	1,063
Total comprehensive income	**$ 196**	$ 1,373	$ 3,483

The accompanying notes are an integral part of these consolidated financial statements.

STATE STREET CORPORATION
CONSOLIDATED STATEMENT OF CONDITION

(Dollars in millions, except per share amounts)	December 31, 2022	December 31, 2021
Assets:		
Cash and due from banks	**$ 3,970**	$ 3,631
Interest-bearing deposits with banks	**101,593**	106,358
Securities purchased under resale agreements	**5,215**	3,012
Trading account assets	**650**	758
Investment securities available-for-sale (less allowance for credit losses of $2 and $2)	**40,579**	73,399
Investment securities held-to-maturity (less allowance for credit losses of $0 and $0) (fair value of $57,913 and $42,271)	**64,700**	42,430
Loans (less allowance for credit losses on loans of $97 and $87)	**32,053**	32,445
Premises and equipment (net of accumulated depreciation of $5,745 and $5,391)	**2,315**	2,261
Accrued interest and fees receivable	**3,434**	3,278
Goodwill	**7,495**	7,621
Other intangible assets	**1,544**	1,816
Other assets	**37,902**	37,615
Total assets	**$ 301,450**	$ 314,624
Liabilities:		
Deposits:		
Non-interest-bearing	**$ 46,755**	$ 56,461
Interest-bearing - U.S.	**111,384**	102,985
Interest-bearing - non-U.S.	**77,325**	95,589
Total deposits	**235,464**	255,035
Securities sold under repurchase agreements	**1,177**	1,575
Short-term borrowings	**2,097**	128
Accrued expenses and other liabilities	**22,525**	17,048
Long-term debt	**14,996**	13,475
Total liabilities	**276,259**	287,261
Commitments, guarantees and contingencies (Notes 12 and 13)		
Shareholders' equity:		
Preferred stock, no par, 3,500,000 shares authorized:		
Series D, 7,500 shares issued and outstanding	**742**	742
Series F, 2,500 shares issued and outstanding	**247**	247
Series G, 5,000 shares issued and outstanding	**493**	493
Series H, 5,000 shares issued and outstanding	**494**	494
Common stock, $1 par, 750,000,000 shares authorized:		
503,879,642 and 503,879,642 shares issued, and 349,024,167 and 365,982,820 shares outstanding	**504**	504
Surplus	**10,730**	10,787
Retained earnings	**27,028**	25,238
Accumulated other comprehensive income (loss)	**(3,711)**	(1,133)
Treasury stock, at cost (154,855,475 and 137,896,822 shares)	**(11,336)**	(10,009)
Total shareholders' equity	**25,191**	27,363
Total liabilities and shareholders' equity	**$ 301,450**	$ 314,624

The accompanying notes are an integral part of these consolidated financial statements.

STATE STREET CORPORATION
CONSOLIDATED STATEMENT OF CHANGES IN SHAREHOLDERS' EQUITY

(Dollars in millions, except per share amounts, shares in thousands)	Preferred Stock	Common Stock Shares	Common Stock Amount	Surplus	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock Shares	Treasury Stock Amount	Total
Balance at December 31, 2019	$ 2,962	503,880	$ 504	$ 10,132	$ 21,918	$ (876)	146,490	$ (10,209)	$ 24,431
Net income					2,420				2,420
Other comprehensive income						1,063			1,063
Preferred stock redeemed	(491)				(9)				(500)
Cash dividends declared:									
Common stock - $2.08 per share					(734)				(734)
Preferred stock					(152)				(152)
Common stock acquired							6,464	(500)	(500)
Common stock awards exercised				72			(2,233)	100	172
Other				1	(1)		2	—	—
Balance at December 31, 2020	$ 2,471	503,880	$ 504	$ 10,205	$ 23,442	$ 187	150,723	$ (10,609)	$ 26,200
Net income					2,693				2,693
Other comprehensive (loss)						(1,320)			(1,320)
Common stock issued				516			(21,724)	1,384	1,900
Preferred stock redeemed	(495)				(5)				(500)
Cash dividends declared:									
Common stock - $2.18 per share					(779)				(779)
Preferred stock					(114)				(114)
Common stock acquired							11,250	(900)	(900)
Common stock awards exercised				48			(2,350)	116	164
Other				18	1		(2)	—	19
Balance at December 31, 2021	$ 1,976	503,880	$ 504	$ 10,787	$ 25,238	$ (1,133)	137,897	$ (10,009)	$ 27,363
Net income					**2,774**				**2,774**
Other comprehensive (loss)						**(2,578)**			**(2,578)**
Cash dividends declared:									
Common stock - $2.40 per share					**(871)**				**(871)**
Preferred stock					**(112)**				**(112)**
Common stock acquired							**19,524**	**(1,500)**	**(1,500)**
Common stock awards exercised				**(43)**			**(2,565)**	**172**	**129**
Other				**(14)**	**(1)**		**(1)**	**1**	**(14)**
Balance at December 31, 2022	**$ 1,976**	**503,880**	**$ 504**	**$ 10,730**	**$ 27,028**	**$ (3,711)**	**154,855**	**$ (11,336)**	**$ 25,191**

The accompanying notes are an integral part of these consolidated financial statements.

STATE STREET CORPORATION
CONSOLIDATED STATEMENT OF CASH FLOWS

(In millions)	Years Ended December 31, 2022	2021	2020
Operating Activities:			
Net income	**$ 2,774**	$ 2,693	$ 2,420
Adjustments to reconcile net income to net cash provided by operating activities:			
Deferred income tax (benefit)	**(62)**	(162)	(194)
Amortization of other intangible assets	**238**	245	234
Other non-cash adjustments for depreciation, amortization and accretion, net	**918**	1,312	1,276
Losses (gains) related to investment securities, net	**2**	(57)	(4)
Provision for credit losses	**20**	(33)	88
Change in trading account assets, net	**108**	57	99
Change in accrued interest and fees receivable, net	**(156)**	(173)	127
Change in collateral deposits, net	**7,821**	(7,662)	(2,951)
Change in unrealized losses (gains) on foreign exchange derivatives, net	**(1,125)**	(3,448)	3,652
Change in other assets, net	**421**	691	(1,406)
Change in accrued expenses and other liabilities, net	**557**	(574)	(170)
Other, net	**438**	401	361
Net cash provided by (used in) operating activities	**11,954**	(6,710)	3,532
Investing Activities:			
Net decrease (increase) in interest-bearing deposits with banks	**4,765**	10,602	(47,995)
Net (increase) decrease in securities purchased under resale agreements	**(2,203)**	94	(1,619)
Proceeds from sales of available-for-sale securities	**4,590**	12,822	2,645
Proceeds from maturities of available-for-sale securities	**17,254**	23,484	23,644
Purchases of available-for-sale securities	**(18,029)**	(53,750)	(37,873)
Purchases of held-to-maturity securities under the MMLF program	**—**	—	(29,242)
Proceeds from maturities of held-to-maturity securities under the MMLF program	**—**	3,299	25,984
Proceeds from maturities of held-to-maturity securities	**9,817**	15,586	15,179
Purchases of held-to-maturity securities	**(8,564)**	(8,583)	(13,981)
Sale of loans	**1,786**	172	324
Net (increase) in loans	**(1,667)**	(4,779)	(1,939)
Business acquisitions, net of cash acquired	**—**	(346)	—
Divestitures	**—**	13	—
Purchases of equity investments and other long-term assets	**(250)**	(216)	(1,436)
Purchases of premises and equipment, net	**(734)**	(811)	(560)
Other, net	**51**	241	1,335
Net cash provided by (used in) investing activities	**6,816**	(2,172)	(65,534)
Financing Activities:			
Net increase (decrease) in time deposits	**1,673**	(363)	(33,466)
Net (decrease) increase in all other deposits	**(21,244)**	15,611	91,391
Net (decrease) increase in securities sold under repurchase agreements	**(398)**	(1,838)	2,311
Net (decrease) increase in short-term borrowings under money market liquidity facility	**—**	(3,302)	3,302
Net increase (decrease) in other short-term borrowings	**1,969**	(557)	(154)
Proceeds from issuance of long-term debt, net of issuance costs	**3,731**	1,343	2,489
Payments for long-term debt and obligations under finance leases	**(1,567)**	(1,443)	(1,724)
Payments for redemption of preferred stock	**—**	(500)	(500)
Proceeds from issuance of common stock, net of issuance costs	**—**	1,900	—
Repurchases of common stock	**(1,500)**	(900)	(515)
Repurchases of common stock for employee tax withholding	**(123)**	(39)	(78)
Payments for cash dividends	**(972)**	(866)	(889)
Net cash (used in) provided by financing activities	**(18,431)**	9,046	62,167
Net increase	**339**	164	165
Cash and due from banks at beginning of period	**3,631**	3,467	3,302
Cash and due from banks at end of period	**$ 3,970**	$ 3,631	$ 3,467
Supplemental disclosure:			
Interest paid	**$ 1,354**	$ 37	$ 375
Income taxes paid, net	**436**	559	403

The accompanying notes are an integral part of these consolidated financial statements.

Note 1. Summary of Significant Accounting Policies

Basis of Presentation

The accounting and financial reporting policies of State Street Corporation conform to U.S. GAAP. State Street Corporation, the Parent Company, is a financial holding company headquartered in Boston, Massachusetts. Unless otherwise indicated or unless the context requires otherwise, all references in these notes to consolidated financial statements to "State Street," "we," "us," "our" or similar references mean State Street Corporation and its subsidiaries on a consolidated basis, including our principal banking subsidiary, State Street Bank.

We have two lines of business:

Investment Servicing, through State Street Investment Services, State Street Global Markets℠, State Street Alpha, and State Street Digital, we provide investment services for institutional clients, including mutual funds, collective investment funds and other investment pools, corporate and public retirement plans, insurance companies, investment managers, foundations and endowments worldwide. Products under the Investment Servicing line of business include: back office products such as custody, accounting, regulatory reporting, investor services, performance and analytics; middle office products such as IBOR, transaction management, loans, cash, derivatives and collateral services, record keeping, client reporting and investment analytics; foreign exchange, brokerage and other trading services; securities finance and enhanced custody products; deposit and short-term investment facilities; loans and lease financing; investment manager and alternative investment manager operations outsourcing; performance, risk and compliance analytics; and financial data management to support institutional investors.

Investment Management, provides a broad range of investment management strategies and products for our clients through State Street Global Advisors. Our investment management strategies and products for equity, fixed income and cash assets, including core and enhanced indexing, multi-asset strategies, active quantitative and fundamental active capabilities and alternative investment strategies span the risk/reward spectrum of these investment products. In addition, we provide a breadth of services and solutions, including ESG investing, defined benefit and defined contribution products, and Global Fiduciary Solutions. State Street Global Advisors is also a provider of ETFs, including the SPDR® ETF brand.

Consolidation

Our consolidated financial statements include the accounts of the Parent Company and its majority- and wholly-owned and otherwise controlled subsidiaries, including State Street Bank. All material inter-company transactions and balances have been eliminated. Certain previously reported amounts have been reclassified to conform to current-year presentation.

We consolidate subsidiaries in which we exercise control. Investments in unconsolidated subsidiaries, recorded in other assets, generally are accounted for under the equity method of accounting if we have the ability to exercise significant influence over the operations of the investee. For investments accounted for under the equity method, our share of income or loss is recorded in other fee revenue in our consolidated statement of income. Investments not meeting the criteria for equity-method treatment are measured at fair value through earnings, except for investments where a fair market value is not readily available, which are accounted for under the cost method of accounting.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions in the application of certain of our significant accounting policies that may materially affect the reported amounts of assets, liabilities, equity, revenue and expenses. As a result of unanticipated events or circumstances, actual results could differ from those estimates.

Foreign Currency Translation

The assets and liabilities of our operations with functional currencies other than the U.S. dollar are translated at month-end exchange rates, and revenue and expenses are translated at rates that approximate average monthly exchange rates. Gains or losses from the translation of the net assets of subsidiaries with functional currencies other than the U.S. dollar, net of related taxes, are recorded in AOCI, a component of shareholders' equity.

Cash and Cash Equivalents

For purposes of the consolidated statement of cash flows, cash and cash equivalents are defined as cash and due from banks.

Sanctions programs or government intervention may inhibit our ability to access cash and due from banks in certain accounts. For example, as of December 31, 2022, we held such accounts in Russia, inclusive of $767 million with our subcustodian, which is an affiliate of a large multinational bank, and with western European-based clearing agencies, for a total of approximately $1.3 billion. Cash and due from banks is evaluated as part of our allowance for credits losses.

Interest-Bearing Deposits with Banks

Interest-bearing deposits with banks generally consist of highly liquid, short-term investments maintained at the Federal Reserve Bank and other non-U.S. central banks with original maturities at the time of purchase of one month or less.

Securities Purchased Under Resale Agreements and Securities Sold Under Repurchase Agreements

Securities purchased under resale agreements and sold under repurchase agreements are accounted for as collateralized financing transactions, and are recorded in our consolidated statement of condition at the amounts at which the securities will be subsequently resold or repurchased, plus accrued interest. Our policy is to take possession or control of securities underlying resale agreements either directly or through agent banks, allowing borrowers the right of collateral substitution and/or short-notice termination. We revalue these securities daily to determine if additional collateral is necessary from the borrower to protect us against credit exposure. We can use these securities as collateral for repurchase agreements.

For securities sold under repurchase agreements collateralized by our investment securities portfolio, the dollar value of the securities remains in investment securities in our consolidated statement of condition. Where a master netting agreement exists or when both parties are members of a common clearing organization, resale and repurchase agreements are recorded on a net basis when specific netting criteria are met.

Fee and Net Interest Income

The majority of fees from investment servicing, investment management, securities finance, trading services and certain types of software and processing fees are recorded in our consolidated statement of income based on the consideration specified in contracts with our customers, and excludes taxes collected from customers subsequently remitted to governmental authorities. We recognize revenue as the services are performed or at a point in time depending on the nature of the services provided. Payments made to third party service providers are generally recognized on a gross basis when we control those services and are deemed to be the principal. Additional information about revenue from contracts with customers is provided in Note 25.

Interest income on interest-earning assets and interest expense on interest-bearing liabilities are recorded in our consolidated statement of income as components of NII, and are generally based on the effective yield of the related financial asset or liability.

Other Significant Policies

The following table identifies our other significant accounting policies and the note and page where a detailed description of each policy can be found:

Fair Value	Note	2	Page	133
Investment Securities	Note	3	Page	140
Loans and Allowance for Credit Losses	Note	4	Page	145
Goodwill and Other Intangible Assets	Note	5	Page	150
Derivative Financial Instruments	Note	10	Page	154
Offsetting Arrangements	Note	11	Page	158
Contingencies	Note	13	Page	162
Variable Interest Entities	Note	14	Page	164
Equity-Based Compensation	Note	18	Page	169
Income Taxes	Note	22	Page	173
Earnings Per Common Share	Note	23	Page	175
Revenue from Contracts with Customers	Note	25	Page	177

Recent Accounting Developments

In March 2022, the SEC staff released Staff Accounting Bulletin No. 121 (SAB 121). SAB 121 expresses the views of the SEC staff regarding the accounting for obligations to safeguard crypto-assets. The guidance requires an entity that has obligations to safeguard crypto-assets held for their platform users to recognize a liability on its balance sheet, along with a corresponding asset, and provides extensive disclosures on the nature and amount of crypto-assets under custody. This guidance was adopted in the second quarter of 2022 and had no financial statement impact. We continue to evaluate the potential impact of the guidance on State Street Digital products and services currently in development.

We did not adopt any other new accounting standards in 2022 that had a material impact to our financial statements.

Relevant standards that were recently issued but not yet adopted as of December 31, 2022

Standard	Description	Date of Adoption	Effects on the financial statements or other significant matters
ASU 2022-02, Financial Instruments—Credit Losses (Topic 326): Troubled Debt Restructurings and Vintage Disclosures	The standard addresses two topics: 1) eliminates the accounting guidance for TDRs, now requiring an entity to determine whether a modification results in a new loan or a continuation of an existing loan, as well as expanding disclosures related to modifications and 2) requires disclosure of current period gross write-offs of financing receivables within the vintage disclosures table.	January 1, 2023	We have adopted the new standard as of January 1, 2023. There are no material impacts as a result of the adoption.
ASU 2022-01, Derivatives and Hedging (Topic 815): Fair Value Hedging—Portfolio Layer Method	The standard makes targeted amendments to 1) expand the existing last-of-layer method to allow multiple hedging layers of a single closed portfolio (now renamed portfolio layer method), 2) expand the scope of the portfolio layer method to include nonprepayable financial assets, 3) clarify which hedging instruments are eligible for designation in a portfolio layer hedge, 4) provide additional guidance on the accounting for, and disclosure of, hedge basis adjustments that are applicable to the portfolio layer method and 5) define how hedge basis adjustments should be considered when determining credit losses for the assets included in the closed portfolio.	January 1, 2023	We have adopted the new standard as of January 1, 2023. There are no material impacts as a result of the adoption.

Additionally, we continue to evaluate other accounting standards that were recently issued, but not yet adopted as of December 31, 2022; none are expected to have a material impact to our financial statements.

Note 2. Fair Value

Fair Value Measurements

We carry trading account assets and liabilities, AFS debt securities, certain equity securities and various types of derivative financial instruments, at fair value in our consolidated statement of condition on a recurring basis. Changes in the fair values of these financial assets and liabilities are recorded either as components of our consolidated statement of income or as components of AOCI within shareholders' equity in our consolidated statement of condition.

We measure fair value for the above-described financial assets and liabilities in conformity with U.S. GAAP that governs the measurement of the fair value of financial instruments. Management believes that its valuation techniques and underlying assumptions used to measure fair value conform to the provisions of U.S. GAAP. We categorize the financial assets and liabilities that we carry at fair value based on a prescribed three-level valuation hierarchy. The hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (level 1) and the lowest priority to valuation methods using significant unobservable inputs (level 3). If the inputs used to measure a financial asset or liability cross different levels of the hierarchy, categorization is based on the lowest-level input that is significant to the fair-value measurement. Management's assessment of the significance of a particular input to the overall fair-value measurement of a financial asset or liability requires judgment, and considers factors specific to that asset or liability. The three levels of the valuation hierarchy are described below.

Level 1. Financial assets and liabilities with values based on unadjusted quoted prices for identical assets or liabilities in an active market. Our level 1 financial assets and liabilities primarily include positions in U.S. government securities and highly liquid U.S. and non-U.S. government fixed-income securities. Our level 1 financial assets also include actively traded exchange- traded equity securities.

Level 2. Financial assets and liabilities with values based on quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the asset or liability. Level 2 inputs include the following:

- Quoted prices for similar assets or liabilities in active markets;
- Quoted prices for identical or similar assets or liabilities in non-active markets;
- Pricing models whose inputs are observable for substantially the full term of the asset or liability; and
- Pricing models whose inputs are derived principally from, or corroborated by, observable market information through correlation or other means for substantially the full term of the asset or liability.

Our level 2 financial assets and liabilities primarily include non-U.S. debt securities carried in trading account assets and various types of fixed-income AFS investment securities, as well as various types of foreign exchange and interest rate derivative instruments.

Fair value for our AFS investment securities categorized in level 2 is measured primarily using information obtained from independent third parties. This third-party information is subject to review by management as part of a validation process, which includes obtaining an understanding of the underlying assumptions and the level of market participant information used to support those assumptions. In addition, management compares significant assumptions used by third parties to available market information. Such information may include known trades or, to the extent that trading activity is limited, comparisons to market research information pertaining to credit expectations, execution prices and the timing of cash flows and, where information is available, back- testing.

Derivative instruments categorized in level 2 predominantly represent foreign exchange contracts used in our trading activities, for which fair value is measured using discounted cash-flow techniques, with inputs consisting of observable spot and forward points, as well as observable interest rate curves. With respect to derivative instruments, we evaluate the impact on valuation of the credit risk of our counterparties. We consider factors such as the likelihood of default by our counterparties, our current and potential future net exposures and remaining maturities in determining the fair value. Valuation adjustments associated with derivative instruments were not material to those instruments for the years ended December 31, 2022 and 2021.

Level 3. Financial assets and liabilities with values based on prices or valuation techniques that require inputs that are both unobservable in the market and significant to the overall measurement of fair value. These inputs reflect management's judgment about the assumptions that a market participant would use in pricing the financial asset or liability, and are based on the best available information, some of which may be internally developed. The following provides a more detailed discussion of our financial assets and liabilities that we may categorize in level 3 and the related valuation methodology.

- The fair value of our investment securities categorized in level 3 is measured using information obtained from third-party sources, typically non-binding broker/dealer quotes, or through the use of internally-developed pricing models. Management has evaluated its methodologies used to measure fair value and has considered the level of observable market information to be insufficient to categorize the securities in level 2.
- The fair value of certain foreign exchange contracts, primarily options, is measured using an option-pricing model. Because of a limited number of observable transactions, certain model inputs are not observable, such as implied volatility surface, but are derived from observable market information.

Our level 3 financial assets and liabilities are similar in structure and profile to our level 1 and level 2 financial instruments, but they trade in less liquid markets, and the measurement of their fair value is therefore less observable.

The following tables present information with respect to our financial assets and liabilities carried at fair value in our consolidated statement of condition on a recurring basis as of the dates indicated:

	Fair Value Measurements on a Recurring Basis As of December 31, 2022				
(In millions)	Quoted Market Prices in Active Markets (Level 1)	Pricing Methods with Significant Observable Market Inputs (Level 2)	Pricing Methods with Significant Unobservable Market Inputs (Level 3)	Impact of Netting[1]	Total Net Carrying Value in Consolidated Statement of Condition
Assets:					
Trading account assets:					
U.S. government securities	$ 40	$ —	$ —		$ 40
Non-U.S. government securities	—	142	—		142
Other	—	468	—		468
Total trading account assets	40	610	—		650
Available-for-sale investment securities:					
U.S. Treasury and federal agencies:					
Direct obligations	7,981	—	—		7,981
Mortgage-backed securities	—	8,509	—		8,509
Total U.S. Treasury and federal agencies	7,981	8,509	—		16,490
Non-U.S. debt securities:					
Mortgage-backed securities	—	1,623	—		1,623
Asset-backed securities	—	1,669	—		1,669
Non-U.S. sovereign, supranational and non-U.S. agency	—	14,089	—		14,089
Other	—	2,091	—		2,091
Total non-U.S. debt securities	—	19,472	—		19,472
Asset-backed securities:					
Student loans	—	115	—		115
Collateralized loan obligations	—	2,355	—		2,355
Non-agency CMBS and RMBS[2]	—	231	—		231
Other	—	88	—		88
Total asset-backed securities	—	2,789	—		2,789
State and political subdivisions	—	823	—		823
Other U.S. debt securities	—	1,005	—		1,005
Total available-for-sale investment securities	7,981	32,598	—		40,579
Other assets:					
Derivative instruments:					
Foreign exchange contracts	9	26,173	4	$ (18,522)	7,664
Interest rate contracts	—	—	—	—	—
Total derivative instruments	9	26,173	4	(18,522)	7,664
Other	6	600	—	—	606
Total assets carried at fair value	$ 8,036	$ 59,981	$ 4	$ (18,522)	$ 49,499
Liabilities:					
Accrued expenses and other liabilities:					
Derivative instruments:					
Foreign exchange contracts	$ 2	$ 25,745	$ 2	$ (17,951)	$ 7,798
Interest rate contracts	1	—	—	—	1
Other derivative contracts	—	216	—	—	216
Total derivative instruments	3	25,961	2	(17,951)	8,015
Total liabilities carried at fair value	$ 3	$ 25,961	$ 2	$ (17,951)	$ 8,015

[1] Represents counterparty netting against level 2 financial assets and liabilities where a legally enforceable master netting agreement exists between us and the counterparty. Netting also reflects asset and liability reductions of $3.30 billion and $2.73 billion, respectively, for cash collateral received from and provided to derivative counterparties.

[2] Consists entirely of non-agency CMBS.

(In millions)	Fair Value Measurements on a Recurring Basis As of December 31, 2021				
	Quoted Market Prices in Active Markets (Level 1)	Pricing Methods with Significant Observable Market Inputs (Level 2)	Pricing Methods with Significant Unobservable Market Inputs (Level 3)	Impact of Netting[1]	Total Net Carrying Value in Consolidated Statement of Condition
Assets:					
Trading account assets:					
U.S. government securities	$ 39	$ —	$ —		$ 39
Non-U.S. government securities	—	134	—		134
Other	—	585	—		585
Total trading account assets	39	719	—		758
Available-for-sale investment securities:					
U.S. Treasury and federal agencies:					
Direct obligations	17,939	—	—		17,939
Mortgage-backed securities	—	18,208	—		18,208
Total U.S. Treasury and federal agencies	17,939	18,208	—		36,147
Non-U.S. debt securities:					
Mortgage-backed securities	—	1,995	—		1,995
Asset-backed securities	—	2,087	—		2,087
Non-U.S. sovereign, supranational and non-U.S. agency	—	23,547	—		23,547
Other	—	3,098	—		3,098
Total non-U.S. debt securities	—	30,727	—		30,727
Asset-backed securities:					
Student loans	—	211	—		211
Collateralized loan obligations	—	2,155	—		2,155
Non-agency CMBS and RMBS[2]	—	52	—		52
Other	—	91	—		91
Total asset-backed securities	—	2,509	—		2,509
State and political subdivisions	—	1,272	—		1,272
Other U.S. debt securities	—	2,744	—		2,744
Total available-for-sale investment securities	17,939	55,460	—		73,399
Other assets:					
Derivative instruments:					
Foreign exchange contracts	2	15,183	—	$ (11,079)	4,106
Interest rate contracts	2	—	—	—	2
Total derivative instruments	4	15,183	—	(11,079)	4,108
Other	—	667	—	—	667
Total assets carried at fair value	$ 17,982	$ 72,029	$ —	$ (11,079)	$ 78,932
Liabilities:					
Accrued expenses and other liabilities:					
Trading account liabilities:					
Derivative instruments:					
Foreign exchange contracts	$ 1	$ 15,824	$ —	$ (10,395)	$ 5,430
Interest rate contracts	—	—	—	—	—
Other derivative contracts	—	301	—	—	301
Total derivative instruments	1	16,125	—	(10,395)	5,731
Total liabilities carried at fair value	$ 1	$ 16,125	$ —	$ (10,395)	$ 5,731

[1] Represents counterparty netting against level 2 financial assets and liabilities where a legally enforceable master netting agreement exists between us and the counterparty. Netting also reflects asset and liability reductions of $1.97 billion and $1.28 billion, respectively, for cash collateral received from and provided to derivative counterparties.

[2] Consists entirely of non-agency CMBS.

The following tables present activity related to our level 3 financial assets during the years ended December 31, 2022 and 2021, respectively. Transfers into and out of level 3 are reported as of the beginning of the period presented. There were no transfers into or out of level 3 during the year ended December 31, 2022. During the year ended December 31, 2021, transfers into level 3 were primarily related to collateralized loan obligations and a U.S. corporate bond, for which fair value was measured using information obtained from third party sources, including non-binding broker/dealer quotes. During the year ended December 31, 2021, transfers out of level 3 were mainly related to collateralized loan obligations, certain non-U.S. debt securities and a U.S. corporate bond, for which fair value was measured using prices based on observable market information.

	Fair Value Measurements Using Significant Unobservable Inputs Year Ended December 31, 2022									
		Total Realized and Unrealized Gains (Losses)								
(In millions)	Fair Value as of December 31, 2021	Recorded in Revenue[1]	Recorded in Other Comprehensive Income	Purchases	Sales	Settlements	Transfers into Level 3	Transfers out of Level 3	Fair Value as of December 31, 2022[1]	Change in Unrealized Gains (Losses) Related to Financial Instruments Held as of December 31, 2022
Assets:										
Derivative instruments:										
Foreign exchange contracts	$ —	$ (1)	$ —	$ 5	$ —	$ —	$ —	$ —	$ 4	$ —
Total derivative instruments	—	(1)	—	5	—	—	—	—	4	—
Total assets carried at fair value	$ —	$ (1)	$ —	$ 5	$ —	$ —	$ —	$ —	$ 4	$ —

[1] Total realized and unrealized gains (losses) on derivative instruments are included within foreign exchange trading services.

	Fair Value Measurements Using Significant Unobservable Inputs Year Ended December 31, 2021									
		Total Realized and Unrealized Gains (Losses)								
(In millions)	Fair Value as of December 31, 2020	Recorded in Revenue[1]	Recorded in Other Comprehensive Income	Purchases	Sales	Settlements	Transfers into Level 3	Transfers out of Level 3	Fair Value as of December 31, 2021[1]	Change in Unrealized Gains (Losses) Related to Financial Instruments Held as of December 31, 2021
Assets:										
Available-for-sale Investment securities:										
Asset-backed securities:										
Collateralized loan obligations	$ 14	$ —	$ —	$ 106	$ —	$ —	$ —	$ (120)	$ —	
Total asset-backed securities	14	—	—	106	—	—	—	(120)	—	
Other U.S. debt securities	—	—	—	—	—	—	15	(15)	—	
Total available-for-sale investment securities	14	—	—	106	—	—	15	(135)	—	
Other assets:										
Derivative instruments:										
Foreign exchange contracts	2	(3)	—	1	—	—	—	—	—	$ (1)
Total derivative instruments	2	(3)	—	1	—	—	—	—	—	(1)
Total assets carried at fair value	$ 16	$ (3)	$ —	$ 107	$ —	$ —	$ 15	$ (135)	$ —	$ (1)

[1] Total realized gains (losses) on AFS investment securities are included within gains (losses) related to investment securities, net. Total realized and unrealized gains (losses) on derivative instruments are included within foreign exchange trading services.

The following table presents quantitative information, as of the dates indicated, about the valuation techniques and significant unobservable inputs used in the valuation of our level 3 financial assets and liabilities measured at fair value on a recurring basis for which we use internally-developed pricing models. The significant unobservable inputs for our level 3 financial assets and liabilities whose fair value is measured using pricing information from non-binding broker/dealer quotes are not included in the table, as the specific inputs applied are not provided by the broker/dealer.

	Quantitative Information about Level 3 Fair Value Measurements							
	Fair Value				Range		Weighted-Average	
(Dollars in millions)	As of December 31, 2022	As of December 31, 2021	Valuation Technique	Significant Unobservable Input[1]	As of December 31, 2022		As of December 31, 2022	As of December 31, 2021
Significant unobservable inputs readily available to State Street:								
Assets:								
Derivative Instruments, foreign exchange contracts	$ 4	$ —	Option model	Volatility	7.3%	- 19.2%	11.4 %	15.2 %
Total	$ 4	$ —						
Liabilities:								
Derivative instruments, foreign exchange contracts	$ 2	$ —	Option model	Volatility	8.1%	- 19.2%	9.8 %	14.7 %
Total	$ 2	$ —						

[1] Significant changes in these unobservable inputs may result in significant changes in fair value measurement of the derivative instrument.

Financial Instruments Not Carried at Fair Value

Estimates of fair value for financial instruments not carried at fair value in our consolidated statement of condition are generally subjective in nature, and are determined as of a specific point in time based on the characteristics of the financial instruments and relevant market information. Disclosure of fair value estimates is not required by U.S. GAAP for certain items, such as lease financing, equity- method investments, obligations for pension and other post-retirement plans, premises and equipment, other intangible assets and income-tax assets and liabilities. Accordingly, aggregate fair-value estimates presented do not purport to represent, and should not be considered representative of, our underlying “market” or franchise value. In addition, because of potential differences in methodologies and assumptions used to estimate fair values, our estimates of fair value should not be compared to those of other financial institutions.

We use the following methods to estimate the fair values of our financial instruments:

- For financial instruments that have quoted market prices, those quoted prices are used to estimate fair value;
- For financial instruments that have no defined maturity, have a remaining maturity of 180 days or less, or reprice frequently to a market rate, we assume that the fair value of these instruments approximates their reported value, after taking into consideration any applicable credit risk; and
- For financial instruments for which no quoted market prices are available, fair value is estimated using information obtained from independent third parties, or by discounting the expected cash flows using an estimated current market interest rate for the financial instrument.

The generally short duration of certain of our assets and liabilities results in a significant number of financial instruments for which fair value equals or closely approximates the amount recorded in our consolidated statement of condition. These financial instruments are reported in the following captions in our consolidated statement of condition: cash and due from banks; interest-bearing deposits with banks; securities purchased under resale agreements; accrued interest and fees receivable; deposits; securities sold under repurchase agreements; and other short-term borrowings.

In addition, due to the relatively short duration of certain of our loans, we consider fair value for these loans to approximate their reported value. The fair value of other types of loans, such as leveraged loans, commercial real estate loans, purchased receivables and municipal loans is estimated using information obtained from independent third parties or by discounting expected future cash flows using current rates at which similar loans would be made to borrowers with similar credit ratings for the same remaining maturities. Commitments to lend have no reported value because their terms are at prevailing market rates.

The following tables present the reported amounts and estimated fair values of the financial assets and liabilities not carried at fair value, as they would be categorized within the fair value hierarchy, as of the dates indicated:

			Fair Value Hierarchy		
(In millions)	**Reported Amount**	**Estimated Fair Value**	**Quoted Market Prices in Active Markets (Level 1)**	**Pricing Methods with Significant Observable Market Inputs (Level 2)**	**Pricing Methods with Significant Unobservable Market Inputs (Level 3)**
December 31, 2022					
Financial Assets:					
Cash and due from banks	**$ 3,970**	**$ 3,970**	**$ 3,970**	**$ —**	**$ —**
Interest-bearing deposits with banks	**101,593**	**101,593**	**—**	**101,593**	**—**
Securities purchased under resale agreements	**5,215**	**5,215**	**—**	**5,215**	**—**
Investment securities held-to-maturity	**64,700**	**57,913**	**11,336**	**46,577**	**—**
Net loans[1]	**32,053**	**31,794**	**—**	**29,679**	**2,115**
Other[2]	**3,626**	**3,626**	**—**	**3,626**	**—**
Financial Liabilities:					
Deposits:					
Non-interest-bearing	**$ 46,755**	**$ 46,755**	**$ —**	**$ 46,755**	**$ —**
Interest-bearing - U.S.	**111,384**	**111,384**	**—**	**111,384**	**—**
Interest-bearing - non-U.S.	**77,325**	**77,325**	**—**	**77,325**	**—**
Securities sold under repurchase agreements	**1,177**	**1,177**	**—**	**1,177**	**—**
Other short-term borrowings	**2,097**	**2,097**	**—**	**2,097**	**—**
Long-term debt	**14,996**	**14,273**	**—**	**14,102**	**171**
Other[2]	**3,626**	**3,626**	**—**	**3,626**	**—**

[1] Includes $5 million of loans classified as held-for-sale that were measured at fair value in level 2 as of December 31, 2022.

[2] Represents a portion of underlying client assets related to our enhanced custody business, which clients have allowed us to transfer and re-pledge.

			Fair Value Hierarchy		
(In millions)	**Reported Amount**	**Estimated Fair Value**	**Quoted Market Prices in Active Markets (Level 1)**	**Pricing Methods with Significant Observable Market Inputs (Level 2)**	**Pricing Methods with Significant Unobservable Market Inputs (Level 3)**
December 31, 2021					
Financial Assets:					
Cash and due from banks	$ 3,631	$ 3,631	$ 3,631	$ —	$ —
Interest-bearing deposits with banks	106,358	106,358	—	106,358	—
Securities purchased under resale agreements	3,012	3,012	—	3,012	—
Investment securities held-to-maturity	42,430	42,271	2,160	40,111	—
Net loans[1]	32,445	32,528	—	29,862	2,666
Other[2]	1	1	—	1	—
Financial Liabilities:					
Deposits:					
Non-interest-bearing	$ 56,461	$ 56,461	$ —	$ 56,461	$ —
Interest-bearing - U.S.	102,985	102,985	—	102,985	—
Interest-bearing - non-U.S.	95,589	95,589	—	95,589	—
Securities sold under repurchase agreements	1,575	1,575	—	1,575	—
Other short-term borrowings	128	128	—	128	—
Long-term debt	13,475	13,552	—	13,385	167
Other[2]	1	1	—	1	—

[1] Includes $8 million of loans classified as held-for-sale that were measured at fair value in level 2 as of December 31, 2021.

[2] Represents a portion of underlying client assets related to our enhanced custody business, which clients have allowed us to transfer and re-pledge.

Note 3. Investment Securities

Investment securities held by us are classified as either trading account assets, AFS, HTM or equity securities held at fair value at the time of purchase and reassessed periodically, based on management's intent.

Generally, trading assets are debt and equity securities purchased in connection with our trading activities and, as such, are expected to be sold in the near term. Our trading activities typically involve active and frequent buying and selling with the objective of generating profits on short-term movements. AFS investment securities are those securities that we intend to hold for an indefinite period of time. AFS investment securities include securities utilized as part of our asset and liability management activities that may be sold in response to changes in interest rates, prepayment risk, liquidity needs or other factors. HTM securities are debt securities that management has the intent and the ability to hold to maturity.

Trading assets are carried at fair value. Both realized and unrealized gains and losses on trading assets are recorded in other fee revenue in our consolidated statement of income. AFS securities are carried at fair value, with any allowance for credit losses recorded through the consolidated statement of income and after-tax net unrealized gains and losses are recorded in AOCI. Gains or losses realized on sales of AFS investment securities are computed using the specific identification method and are recorded in gains (losses) related to investment securities, net, in our consolidated statement of income. HTM investment securities are carried at cost, adjusted for amortization of premiums and accretion of discounts, with any allowance for credit losses recorded through the consolidated statement of income.

The following table presents the amortized cost, fair value and associated unrealized gains and losses of AFS and HTM investment securities as of the dates indicated:

	December 31, 2022				December 31, 2021			
		Gross Unrealized				Gross Unrealized		
(In millions)	Amortized Cost	Gains	Losses	Fair Value	Amortized Cost	Gains	Losses	Fair Value
Available-for-sale:								
U.S. Treasury and federal agencies:								
Direct obligations	$ 8,232	$ 10	$ 261	$ 7,981	$ 18,111	$ 24	$ 196	$ 17,939
Mortgage-backed securities	8,767	2	260	8,509	18,154	148	94	18,208
Total U.S. Treasury and federal agencies	16,999	12	521	16,490	36,265	172	290	36,147
Non-U.S. debt securities:								
Mortgage-backed securities	1,642	—	19	1,623	1,986	12	3	1,995
Asset-backed securities[1]	1,696	—	27	1,669	2,087	2	2	2,087
Non-U.S. sovereign, supranational and non-U.S. agency	14,512	1	424	14,089	23,533	114	100	23,547
Other[2]	2,255	—	164	2,091	3,113	17	32	3,098
Total non-U.S. debt securities	20,105	1	634	19,472	30,719	145	137	30,727
Asset-backed securities:								
Student loans[3]	116	—	1	115	209	2	—	211
Collateralized loan obligations[4]	2,394	—	39	2,355	2,155	2	2	2,155
Non-agency CMBS and RMBS[5]	237	—	6	231	52	—	—	52
Other	90	—	2	88	90	1	—	91
Total asset-backed securities	2,837	—	48	2,789	2,506	5	2	2,509
State and political subdivisions	839	1	17	823	1,216	59	3	1,272
Other U.S. debt securities[6]	1,078	—	73	1,005	2,734	23	13	2,744
Total available-for-sale securities[7][8]	$ 41,858	$ 14	$ 1,293	$ 40,579	$ 73,440	$ 404	$ 445	$ 73,399
Held-to-maturity:								
U.S. Treasury and federal agencies:								
Direct obligations	$ 11,693	$ —	$ 341	$ 11,352	$ 2,170	$ 10	$ —	$ 2,180
Mortgage-backed securities	42,307	3	6,030	36,280	33,481	362	578	33,265
Total U.S. Treasury and federal agencies	54,000	3	6,371	47,632	35,651	372	578	35,445
Non-U.S. debt securities:								
Non-U.S. sovereign, supranational and non-U.S. agency	6,603	—	304	6,299	1,564	—	9	1,555
Total non-U.S. debt securities	6,603	—	304	6,299	1,564	—	9	1,555
Asset-backed securities:								
Student loans[3]	3,955	1	134	3,822	4,908	48	14	4,942
Non-agency CMBS and RMBS[9]	142	18	—	160	307	22	1 —	329
Total asset-backed securities	4,097	19	134	3,982	5,215	70	14	5,271
Total held-to-maturity securities[7]	$ 64,700	$ 22	$ 6,809	$ 57,913	$ 42,430	$ 442	$ 601	$ 42,271

[1] As of December 31, 2022 and 2021, the fair value includes non-U.S. collateralized loan obligations of $0.86 billion and $0.83 billion, respectively.
[2] As of December 31, 2022 and 2021, the fair value includes non-U.S. corporate bonds of $1.14 billion and $1.53 billion, respectively,
[3] Primarily comprised of securities guaranteed by the federal government with respect to at least 97% of defaulted principal and accrued interest on the underlying loans.
[4] Excludes collateralized loan obligations in loan form. Refer to Note 4 for additional information.
[5] Consists entirely of non-agency CMBS as of both December 31, 2022 and 2021.
[6] As of December 31, 2022 and 2021, the fair value of U.S. corporate bonds was $1.01 billion and $2.44 billion, respectively.
[7] An immaterial amount of accrued interest related to HTM and AFS investment securities was excluded from the amortized cost basis for the period ended December 31, 2022.
[8] As of both December 31, 2022 and December 31, 2021, total amortized cost included an allowance for credit losses on AFS investment securities of $2 million.
[9] As of December 31, 2022 and 2021, the total amortized cost included $133 million and $292 million, respectively, of non-agency CMBS and $9 million and $14 million of non-agency RMBS, respectively.

Aggregate investment securities with carrying values of approximately $70.52 billion and $80.81 billion as of December 31, 2022 and 2021, respectively, were designated as pledged for public and trust deposits, short-term borrowings and for other purposes as provided by law.

In 2022, $23.56 billion of investment securities previously classified as AFS were transferred to HTM. These transfers reflect our intent to hold these securities until their maturity. These securities were transferred at fair value, which included a net unrealized loss of $1.26 billion. Upon transfer of a debt security from AFS to HTM, the amortized cost is reset to fair value. Any net unrealized gain or loss at the date of transfer will remain in AOCI and be amortized into net interest income over the remaining life of the security (ranging from approximately 1 to 37

years). The amortization of amounts retained in AOCI will offset the effect on net interest income of the amortization of the premium or discount resulting from transferring securities at fair value.

In 2021 and 2020, $1.25 billion and $8.60 billion, respectively, of agency MBS, previously classified as AFS, were transferred to HTM. These transfers reflect our intent to hold these securities until their maturity. These securities were transferred at fair value, which included a net unrealized gain of $12 million and $120 million as of December 31, 2021 and 2020, respectively, which will remain in AOCI and be amortized into net interest income over the remaining life of the security (ranging from approximately 1 to 36 years). The amortization of amounts retained in AOCI will offset the effect on net interest income of the amortization of the premium or discount resulting from transferring securities at fair value.

In 2022, 2021 and 2020, proceeds from sales of AFS securities was approximately $4.59 billion, $12.82 billion and $2.65 billion, respectively, primarily driven by MBS, ABS, municipal bonds and supranationals, resulting in a pre-tax loss of approximately $2 million in 2022, a pre-tax gain of approximately $57 million in 2021 and a pre-tax loss less than $4 million in 2020.

The following tables present the aggregate fair values of AFS investment securities that have been in a continuous unrealized loss position for less than 12 months, and those that have been in a continuous unrealized loss position for 12 months or longer, as of the dates indicated:

	As of December 31, 2022					
	Less than 12 months		12 months or longer		Total	
(In millions)	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
Available-for-sale:						
U.S. Treasury and federal agencies:						
Direct obligations	$ 1,337	$ 15	$ 5,745	$ 246	$ 7,082	$ 261
Mortgage-backed securities	5,524	130	2,815	130	8,339	260
Total U.S. Treasury and federal agencies	6,861	145	8,560	376	15,421	521
Non-U.S. debt securities:						
Mortgage-backed securities	1,278	15	272	4	1,550	19
Asset-backed securities	859	11	765	16	1,624	27
Non-U.S. sovereign, supranational and non-U.S. agency	6,750	108	5,800	316	12,550	424
Other	771	27	1,233	137	2,004	164
Total non-U.S. debt securities	9,658	161	8,070	473	17,728	634
Asset-backed securities:						
Student loans	89	1	—	—	89	1
Collateralized loan obligations	1,577	27	710	12	2,287	39
Non-agency CMBS and RMBS	193	6	3	—	196	6
Other	88	2	—	—	88	2
Total asset-backed securities	1,947	36	713	12	2,660	48
State and political subdivisions	669	12	42	5	711	17
Other U.S. debt securities	294	15	708	58	1,002	73
Total	$ 19,429	$ 368	$ 18,093	$ 924	$ 37,522	$ 1,293

	As of December 31, 2021					
	Less than 12 months		12 months or longer		Total	
(In millions)	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses	Fair Value	Gross Unrealized Losses
Available-for-sale:						
U.S. Treasury and federal agencies:						
Direct obligations	$ 14,749	$ 194	$ 1,624	$ 2	$ 16,373	$ 196
Mortgage-backed securities	10,417	80	369	14	10,786	94
Total U.S. Treasury and federal agencies	25,166	274	1,993	16	27,159	290
Non-U.S. debt securities:						
Mortgage-backed securities	577	3	30	—	607	3
Asset-backed securities	1,021	2	127	—	1,148	2
Non-U.S. sovereign, supranational and non-U.S. agency	10,406	97	63	3	10,469	100
Other	1,570	31	19	1	1,589	32
Total non-U.S. debt securities	13,574	133	239	4	13,813	137
Asset-backed securities:						
Collateralized loan obligations	1,268	2	—	—	1,268	2
Total asset-backed securities	1,268	2	—	—	1,268	2
State and political subdivisions	10	—	45	3	55	3
Other U.S. debt securities	1,214	13	—	—	1,214	13
Total	$ 41,232	$ 422	$ 2,277	$ 23	$ 43,509	$ 445

The following table presents the amortized cost and the fair value of contractual maturities of debt investment securities as of December 31, 2022. The maturities of certain ABS, MBS and collateralized mortgage obligations are based on expected principal payments. Actual maturities may differ from these expected maturities since certain borrowers have the right to prepay obligations with or without prepayment penalties.

	As of December 31, 2022									
(In millions)	Under 1 Year		1 to 5 Years		6 to 10 Years		Over 10 Years		Total	
	Amortized Cost	Fair Value	Amortized Cost	Fair Value	Amortized Cost	Fair Value	Amortized Cost	Fair Value	Amortized Cost	Fair Value
Available-for-sale:										
U.S. Treasury and federal agencies:										
Direct obligations	$ 1,966	$ 1,940	$ 5,731	$ 5,496	$ 535	$ 545	$ —	$ —	$ 8,232	$ 7,981
Mortgage-backed securities	51	49	459	454	6,513	6,345	1,744	1,661	8,767	8,509
Total U.S. Treasury and federal agencies	2,017	1,989	6,190	5,950	7,048	6,890	1,744	1,661	16,999	16,490
Non-U.S. debt securities:										
Mortgage-backed securities	58	58	385	382	—	—	1,199	1,183	1,642	1,623
Asset-backed securities	347	342	587	578	451	444	311	305	1,696	1,669
Non-U.S. sovereign, supranational and non-U.S. agency	4,619	4,567	7,236	6,897	2,657	2,625	—	—	14,512	14,089
Other	190	187	1,904	1,769	141	120	20	15	2,255	2,091
Total non-U.S. debt securities	5,214	5,154	10,112	9,626	3,249	3,189	1,530	1,503	20,105	19,472
Asset-backed securities:										
Student loans	39	39	—	—	—	—	77	76	116	115
Collateralized loan obligations	183	182	397	390	1,225	1,205	589	578	2,394	2,355
Non-agency CMBS and RMBS	—	—	—	—	—	—	237	231	237	231
Other	—	—	90	88	—	—	—	—	90	88
Total asset-backed securities	222	221	487	478	1,225	1,205	903	885	2,837	2,789
State and political subdivisions	146	144	273	266	376	373	44	40	839	823
Other U.S. debt securities	119	117	918	850	41	38	—	—	1,078	1,005
Total	$ 7,718	$ 7,625	$ 17,980	$ 17,170	$ 11,939	$ 11,695	$ 4,221	$ 4,089	$ 41,858	$ 40,579
Held-to-maturity:										
U.S. Treasury and federal agencies:										
Direct obligations	$ 2,329	$ 2,285	$ 9,327	$ 9,032	$ 24	$ 22	$ 13	$ 13	$ 11,693	$ 11,352
Mortgage-backed securities	154	139	578	542	4,627	3,844	36,948	31,755	42,307	36,280
Total U.S. Treasury and federal agencies	2,483	2,424	9,905	9,574	4,651	3,866	36,961	31,768	54,000	47,632
Non-U.S. debt securities:										
Non-U.S. sovereign, supranational and non-U.S. agency	1,518	1,492	4,520	4,293	565	514	—	—	6,603	6,299
Total non-U.S. debt securities	1,518	1,492	4,520	4,293	565	514	—	—	6,603	6,299
Asset-backed securities:										
Student loans	290	279	8	8	931	911	2,726	2,624	3,955	3,822
Non-agency CMBS and RMBS	122	129	—	—	—	—	20	31	142	160
Total asset-backed securities	412	408	8	8	931	911	2,746	2,655	4,097	3,982
Total	$ 4,413	$ 4,324	$ 14,433	$ 13,875	$ 6,147	$ 5,291	$ 39,707	$ 34,423	$ 64,700	$ 57,913

Interest income related to debt securities is recognized in our consolidated statement of income using the effective interest method, or on a basis approximating a level rate of return over the contractual or estimated life of the security. The level rate of return considers any non-refundable fees or costs, as well as purchase premiums or discounts, adjusted as prepayments occur, resulting in amortization or accretion, accordingly.

Allowance for Credit Losses on Debt Securities and Impairment of AFS Securities

An allowance for credit losses is recognized on HTM securities upon acquisition of the security, and on AFS securities when the fair value and expected future cash flows of the investment securities are less than their amortized cost basis. Our assessment of impairment involves an evaluation of economic and security-specific factors. Such factors are based on estimates, derived by management, which contemplate current market conditions and security-specific performance. To the extent that market conditions are worse than management's expectations or due to idiosyncratic bond performance, the credit-related component of impairment, in particular, could increase and would be recorded in the provision for credit losses.

We conduct quarterly reviews of HTM and AFS securities on a collective (pool) basis when similar risk characteristics exist to determine whether an allowance for credit losses should be recognized. HTM securities are evaluated for expected credit loss utilizing a probability of default methodology, or discounted cash flows assessed against the amortized cost of the investment security excluding accrued interest.

We monitor the credit quality of the HTM investment securities using a variety of methods, including both external and internal credit ratings.

With respect to certain classes of debt securities, primarily U.S. Treasuries and agency securities (mainly issued by U.S. Government entities and agencies, as well as Group of Seven sovereigns), we consider the history of credit losses, current conditions and reasonable and supportable forecasts, which may indicate that the expectation that nonpayment of the amortized cost basis is or continues to be zero. Therefore, for those securities, we do not record expected credit losses.

We did not have any allowance for credit losses on our HTM securities as of both December 31, 2022 and 2021.

We have elected to not record an allowance on accrued interest for HTM securities. Accrued interest on these securities is reversed against interest income when payment on a security is delinquent for greater than 90 days from the date of payment.

An AFS security is impaired when the current fair value of an individual security is below its amortized cost basis. An allowance for credit losses on impaired AFS securities is recorded when the present value of expected future cash flows of the investment security is less than its amortized cost basis, limited to the amount by which the security’s amortized cost basis exceeds the fair value. Investment securities will be written down to fair value through the consolidated statement of income when management intends to sell (or may be required to sell) the securities before they recover in value.

Our review of impaired AFS investment securities generally includes:

- the identification and evaluation of securities that have indications of potential impairment, such as issuer-specific concerns, including deteriorating financial condition or bankruptcy;
- the analysis of expected future cash flows of securities, based on quantitative and qualitative factors;
- the analysis of the collectability of those future cash flows, including information about past events, current conditions, and reasonable and supportable forecasts;
- the analysis of the underlying collateral for MBS and ABS;
- the analysis of individual impaired securities, including the anticipated recovery period and the magnitude of the overall price decline;
- evaluation of factors or triggers that could cause individual securities to be deemed impaired and those that would not support impairment; and
- documentation of the results of these analyses.

Our allowance for credit losses on our AFS securities was approximately $2 million as of both December 31, 2022 and 2021.

Substantially all of our investment securities portfolio is composed of debt securities. A critical component of our assessment of impairment of these debt securities is the identification of credit-impaired securities for which management does not expect to receive cash flows sufficient to recover the entire amortized cost basis of the security.

Debt securities that are not deemed to be credit impaired are subject to additional management analysis to assess whether management intends to sell, or, more likely than not, would be required to sell, the security before the expected recovery of its amortized cost basis.

As of December 31, 2022, 99% of our HTM and AFS investment portfolio is publicly rated investment grade.

After a review of the investment portfolio, taking into consideration then-current economic conditions, adverse situations that might affect our ability to fully collect principal and interest, the timing of future payments, the credit quality and performance of the collateral underlying MBS and ABS and other relevant factors, management considered the aggregate decline in fair value of the investment securities portfolio and the resulting gross pre-tax unrealized

losses of $8,102 million and $1,046 million related to 2,094 and 954 securities as of December 31, 2022 and 2021, respectively, to be temporary, and not the result of any material changes in the credit characteristics of the securities.

Note 4. Loans and Allowance for Credit Losses

Loans are generally recorded at their principal amount outstanding, net of the allowance for credit losses, unearned income, and any net unamortized deferred loan origination fees. Loans that are classified as held-for-sale are measured at lower of cost or fair value on an individual basis.

Interest income related to loans is recognized in our consolidated statement of income using the interest method, or on a basis approximating a level rate of return over the term of the loan. Fees received for providing loan commitments and letters of credit that we anticipate will result in loans typically are deferred and amortized to interest income over the term of the related loan, beginning with the initial borrowing. Fees on commitments and letters of credit are amortized to software and processing fees over the commitment period when funding is not known or expected.

The following table presents our recorded investment in loans, by segment, as of the dates indicated:

(In millions)	December 31, 2022	December 31, 2021
Domestic[1]:		
Commercial and financial:		
Fund Finance[2]	**$ 12,154**	$ 12,296
Leveraged loans	**2,431**	3,106
Overdrafts	**1,707**	1,796
Collateralized loan obligations in loan form	**100**	100
Other[3]	**1,871**	2,262
Commercial real estate	**2,985**	2,554
Total domestic	**21,248**	22,114
Foreign[1]:		
Commercial and financial:		
Fund Finance[2]	**3,949**	4,965
Leveraged loans	**1,118**	1,328
Overdrafts	**1,094**	1,312
Collateralized loan obligations in loan form	**4,741**	2,813
Other[3]	**—**	—
Total foreign	**10,902**	10,418
Total loans[2]	**32,150**	32,532
Allowance for credit losses	**(97)**	(87)
Loans, net of allowance	**$ 32,053**	$ 32,445

[1] Domestic and foreign categorization is based on the borrower's country of domicile.

[2] Fund finance loans include primarily $7.57 billion private equity capital call finance loans, $6.61 billion loans to real money funds and $1.11 billion loans to business development companies as of December 31, 2022, compared to $9.15 billion private equity capital call finance loans, $6.40 billion loans to real money funds and $1.39 billion loans to business development companies as of December 31, 2021.

[3] Includes $1.51 billion securities finance loans, $321 million loans to municipalities and $42 million other loans as of December 31, 2022 and $1.78 billion securities finance loans, $455 million loans to municipalities and $23 million other loans as of December 31, 2021.

We segregate our loans into two segments: commercial and financial loans and commercial real estate loans. We further classify commercial and financial loans as fund finance loans, leveraged loans, overdrafts and other loans. Fund finance loans are composed of revolving credit lines providing liquidity and leverage to mutual fund and private equity fund clients, as well as collateralized loan obligations in loan form. These classifications reflect their risk characteristics, their initial measurement attributes and the methods we use to monitor and assess credit risk.

Certain loans are pledged as collateral for access to the Federal Reserve's discount window. As of December 31, 2022 and 2021, the loans pledged as collateral totaled $10.17 billion and $10.80 billion, respectively.

We generally place loans on non-accrual status once principal or interest payments are 90 days contractually past due, or earlier if management determines that full collection is not probable. Loans 90 days past due, but considered both well-secured and in the process of collection, may be excluded from non-accrual status. When we place a loan on non-accrual status, the accrual of interest is discontinued and previously recorded but unpaid interest is reversed and generally charged against interest income. For loans on non-accrual status, income is recognized on a cash basis after recovery of principal, if and when interest payments are received. Loans may be removed from non-accrual status when repayment is reasonably assured and performance under the terms of the loan has been demonstrated. As of both December 31, 2022 and 2021, we had no loans on non-accrual status.

In 2022, we purchased $1.98 billion of collateralized loan obligations in loan form, which were all investment grade as of December 31, 2022.

We sold $1.80 billion of loans in 2022, of which $5 million was held-for-sale as of December 31, 2022. We recorded a charge-off against the allowance for these loans of $6 million in 2022.

In certain circumstances, we restructure troubled loans by granting concessions to borrowers experiencing financial difficulty. Once restructured, the loans are generally considered impaired until their maturity, regardless of whether the borrowers perform under the modified terms of the loans. There were no loans modified in troubled debt restructurings during the years ended December 31, 2022 and 2021.

Allowance for Credit Losses

We recognize an allowance for credit losses in accordance with ASC 326 for financial assets held at amortized cost and off-balance sheet commitments. The allowance for credit losses is reviewed on a regular basis, and any provision for credit losses is recorded to reflect the amount necessary to maintain

the allowance for expected credit losses at a level which represents what management does not expect to recover due to expected credit losses. For additional discussion on the allowance for credit losses for investment securities, please refer to Note 3.

When the allowance is recorded, a provision for credit loss expense is recognized in net income. The allowance for credit losses for financial assets (excluding investment securities, as discussed in Note 3) represents the portion of the amortized cost basis, including accrued interest for financial assets held at amortized cost, which management does not expect to recover due to expected credit losses and is presented on the statement of condition as an offset to the amortized cost basis. The accrued interest balance is presented separately on the statement of condition within accrued interest and fees receivable. The allowance for off-balance sheet commitments is presented within other liabilities. Loans are charged off to the allowance for credit losses in the reporting period in which either an event occurs that confirms the existence of a loss on a loan, including a sale of a loan below its carrying value, or a portion of a loan is determined to be uncollectible.

The allowance for credit losses may be determined using various methods, including discounted cash flow methods, loss-rate methods, probability-of-default methods, and other quantitative or qualitative methods as determined by us. The method used to estimate expected credit losses may vary depending on the type of financial asset, our ability to predict the timing of cash flows, and the information available to us.

The allowance for credit losses as reported in our consolidated statement of condition is adjusted by provision for credit losses, which is reported in earnings, and reduced by the charge-off of principal amounts, net of recoveries.

We measure expected credit losses of financial assets on a collective (pool) basis when similar risk characteristic exist. Each reporting period, we assess whether the assets in the pool continue to display similar risk characteristics.

For a financial asset that does not share risk characteristics with other assets, expected credit losses are measured separately using one or more of the methods noted above. As of December 31, 2022, we had 6 loans for $99 million in the commercial and financial segment that no longer met the similar risk characteristics of their collective pool. We recorded an allowance for credit losses of $5 million as of December 31, 2022 on these loans.

When the asset is collateral dependent, which means when the borrower is experiencing financial difficulty and repayment is expected to be provided substantially through the operation or sale of the collateral, expected credit losses are measured as the difference between the amortized cost basis of the asset and the fair value of the collateral, adjusted for the estimated costs to sell.

Determining the appropriateness of the allowance is complex and requires judgment by management about the effect of matters that are inherently uncertain. In future periods, factors and forecasts then prevailing may result in significant changes in the allowance for credit losses in those future periods.

We estimate credit losses over the contractual life of the financial asset, while factoring in prepayment activity, where supported by data, over a three year reasonable and supportable forecast period. We utilize a baseline, upside and downside scenario which are applied based on a probability weighting, in order to better reflect management's expectation of expected credit losses given existing market conditions and the changes in the economic environment. The multiple scenarios are based on a three year horizon (or less depending on contractual maturity) and then revert linearly over a two year period to a ten-year historical average thereafter. The contractual term excludes expected extensions, renewals and modifications, but includes prepayment assumptions where applicable.

As part of our allowance methodology, we establish qualitative reserves to address any risks inherent in our portfolio that are not addressed through our quantitative reserve assessment. These factors may relate to, among other things, legislation changes or new regulation, credit concentration, loan markets, scenario weighting and overall model limitations. The qualitative adjustments are applied to our portfolio of financial instruments under the existing governance structure and are inherently judgmental.

Credit Quality

Credit quality for financial assets held at amortized cost is continuously monitored by management and is reflected within the allowance for credit losses.

We use an internal risk-rating system to assess our risk of credit loss for each loan. This risk-rating process incorporates the use of risk-rating tools in conjunction with management judgment. Qualitative and quantitative inputs are captured in a systematic manner, and following a formal review and approval process, an internal credit rating based on our credit scale is assigned.

When computing allowance levels, credit loss assumptions are estimated using models that categorize asset pools based on loss history, delinquency status and other credit trends and risk characteristics, including current conditions and reasonable and supportable forecasts about the future. Determining the appropriateness of the allowance is complex and requires judgment by management about the effect of matters that are inherently uncertain. In future periods evaluations of the overall asset portfolio, in light of the factors and forecasts then prevailing, may result in significant changes in the allowance and credit loss expense in those future periods.

Credit quality is assessed and monitored by evaluating various attributes in order to enable timely detection of any concerns with the customer's credit rating. The results of those evaluations are utilized in underwriting new loans and transactions with counterparties and in our process for estimation of expected credit losses.

In assessing the risk rating assigned to each individual loan, among the factors considered are the borrower's debt capacity, collateral coverage, payment history and delinquency experience, financial flexibility and earnings strength, the expected amounts and source of repayment, the level and nature of contingencies, if any, and the industry and geography in which the borrower operates. These factors are based on an evaluation of historical and current information, and involve subjective assessment and interpretation. Credit counterparties are evaluated and risk-rated on an individual basis at least annually. Management considers the ratings to be current as of December 31, 2022.

Our internal risk rating methodology assigns risk ratings to counterparties ranging from Investment Grade, Speculative, Special Mention, Substandard, Doubtful and Loss.

- Investment Grade: Counterparties with strong credit quality and low expected credit risk and probability of default. Approximately 85% of our loans were rated as investment grade as of December 31, 2022 with external credit ratings, or equivalent, of "BBB-" or better.
- Speculative: Counterparties that have the ability to repay but face significant uncertainties, such as adverse business or financial circumstances that could affect credit risk or economic downturns. Loans to counterparties rated as speculative account for approximately 14% of our loans as of December 31, 2022, and are concentrated in leveraged loans. Approximately 96% of those leveraged loans have an external credit rating, or equivalent, of "BB" or "B" as of December 31, 2022.
- Special Mention: Counterparties with potential weaknesses that, if uncorrected, may result in deterioration of repayment prospects.
- Substandard: Counterparties with well-defined weakness that jeopardizes repayment with the possibility we will sustain some loss.
- Doubtful: Counterparties with well-defined weakness which make collection or liquidation in full highly questionable and improbable.
- Loss: Counterparties which are uncollectible or have little value.

The following tables present our recorded loans to counterparties by risk rating, as noted above, as of the dates indicated:

December 31, 2022 **(In millions)**	**Commercial and Financial**	**Commercial Real Estate**	**Total Loans**
Investment grade	**$ 24,667**	**$ 2,509**	**$ 27,176**
Speculative	**4,103**	**388**	**4,491**
Special mention	**291**	**88**	**379**
Substandard	**99**	**—**	**99**
Total[1][2]	**$ 29,160**	**$ 2,985**	**$ 32,145**

December 31, 2021 **(In millions)**	**Commercial and Financial**	**Commercial Real Estate**	**Total Loans**
Investment grade	$ 24,974	$ 2,222	$ 27,196
Speculative	4,714	270	4,984
Special mention	118	62	180
Substandard	164	—	164
Total[2]	$ 29,970	$ 2,554	$ 32,524

[1] Loans Include $2.80 billion and $3.11 billion of overdrafts as of December 31, 2022 and 2021, respectively. Overdrafts are short-term in nature and do not present a significant credit risk to us. As of December 31, 2022, $2.41 billion overdrafts were investment grade and $0.39 billion overdrafts were speculative.

[2] Total does not include $5 million and $8 million of loans classified as held-for-sale as of December 31, 2022 and 2021, respectively.

Financial assets held at amortized cost that are not loans are disaggregated based on product type. This includes our fees receivable balance, which have had no history of credit losses, and are evaluated collectively as a pool.

Securities purchased under a resale agreement and securities-financing within our principal business utilize the collateral maintenance provisions included within ASC 326. An allowance for credit losses is recognized for any remaining exposure based on counterparty type.

The allowance for credit losses for off-balance sheet credit exposures, recorded in accrued expenses and other liabilities in our consolidated statement of condition, represents management's estimate of credit losses primarily in outstanding letters and lines of credit and other credit-enhancement facilities provided to our clients and outstanding as of the balance sheet date. The allowance is evaluated quarterly by management. Factors considered in evaluating the appropriate level of this allowance are similar to those considered with respect to the allowance for credit losses on financial assets held at amortized cost. Provisions to maintain the allowance at a level considered by us to be appropriate to absorb estimated credit losses in outstanding facilities are recorded in the provision for credit losses in our consolidated statement of income.

The following table presents the amortized cost basis, by year of origination and credit quality indicator as of December 31, 2022. For origination years before the fifth annual period, we present the aggregate amortized cost basis of loans. For purchased loans, the date of issuance is used to determine the year of origination, not the date of acquisition. For modified, extended or renewed lending arrangements, we evaluate whether a credit event has occurred which would consider the loan to be a new arrangement.

(In millions)	2022	2021	2020	2019	2018	Prior	Revolving Loans	Total[1]
Domestic loans:								
Commercial and financial:								
Risk Rating:								
Investment grade	$ 1,577	$ 185	$ 72	$ 300	$ —	$ 9	$ 12,843	$ 14,986
Speculative	523	859	168	461	236	151	545	2,943
Special mention	—	120	—	105	19	—	—	244
Substandard	—	—	5	42	31	7	—	85
Total commercial and financing	$ 2,100	$ 1,164	$ 245	$ 908	$ 286	$ 167	$ 13,388	$ 18,258
Commercial real estate:								
Risk Rating:								
Investment grade	$ 519	$ 612	$ 100	$ 330	$ 511	$ 436	$ —	$ 2,508
Speculative	—	—	49	163	111	65	—	388
Special mention	—	—	—	49	40	—	—	89
Total commercial real estate	$ 519	$ 612	$ 149	$ 542	$ 662	$ 501	$ —	$ 2,985
Non-U.S. loans:								
Commercial and financial:								
Risk Rating:								
Investment grade	$ 2,986	$ 2,799	$ —	$ —	$ —	$ —	$ 3,897	$ 9,682
Speculative	234	529	100	181	107	—	9	1,160
Special mention	—	—	18	5	23	—	—	46
Substandard	—	—	—	—	14	—	—	14
Total commercial and financing	$ 3,220	$ 3,328	$ 118	$ 186	$ 144	$ —	$ 3,906	$ 10,902
Total loans[2]	$ 5,839	$ 5,104	$ 512	$ 1,636	$ 1,092	$ 668	$ 17,294	$ 32,145

[1] Any reserve associated with accrued interest is not material. As of December 31, 2022, accrued interest receivable of $200 million included in the amortized cost basis of loans has been excluded from the amortized cost basis within this table.

[2] Total does not include $5 million of loans classified as held-for-sale as of December 31, 2022.

The following table presents the amortized cost basis, by year of origination and credit quality indicator as of December 31, 2021:

(In millions)	2021	2020	2019	2018	2017	Prior	Revolving Loans	Total[1]
Domestic loans:								
Commercial and financial:								
Risk Rating:								
Investment grade	$ 1,988	$ 59	$ 347	$ 2	$ 37	$ —	$ 13,591	$ 16,024
Speculative	1,096	351	706	425	350	7	343	3,278
Special mention	—	—	70	29	19	—	—	118
Substandard	—	5	71	56	8	—	—	140
Total commercial and financing	$ 3,084	$ 415	$ 1,194	$ 512	$ 414	$ 7	$ 13,934	$ 19,560
Commercial real estate:								
Risk Rating:								
Investment grade	$ 580	$ 129	$ 383	$ 657	$ 276	$ 197	$ —	$ 2,222
Speculative	24	49	149	20	—	28	—	270
Special mention	—	—	22	40	—	—	—	62
Total commercial real estate	$ 604	$ 178	$ 554	$ 717	$ 276	$ 225	$ —	$ 2,554
Non-U.S. loans:								
Commercial and financial:								
Risk Rating:								
Investment grade	$ 4,087	$ —	$ —	$ —	$ —	$ —	$ 4,863	$ 8,950
Speculative	561	201	264	204	120	31	55	1,436
Substandard	—	—	—	24	—	—	—	24
Total commercial and financing	$ 4,648	$ 201	$ 264	$ 228	$ 120	$ 31	$ 4,918	$ 10,410
Total loans[2]	$ 8,336	$ 794	$ 2,012	$ 1,457	$ 810	$ 263	$ 18,852	$ 32,524

[1] Any reserve associated with accrued interest is not material. As of December 31, 2021, accrued interest receivable of $86 million included in the amortized cost basis of loans has been excluded from the amortized cost basis within this table.

[2] Total does not include $8 million of loans classified as held-for-sale as of December 31, 2021.

The following table presents the activity in the allowance for credit losses by portfolio and class for the years ended December 31, 2022 and 2021:

	Year End December 31, 2022							
	Commercial and Financial							
(In millions)	Leveraged Loans	Other Loans[1]	Commercial Real Estate	Available-for-sale securities	Held-to-Maturity Securities	Off-Balance Sheet Commitments	All Other	Total
Allowance for credit losses:								
Beginning balance	**$ 61**	**$ 12**	**$ 14**	**$ 2**	**$ —**	**$ 19**	**$ —**	**$ 108**
Charge-offs[2]	**(6)**	**—**	**—**	**—**	**—**	**—**	**(1)**	**(7)**
Provision	**18**	**(7)**	**5**	**—**	**—**	**4**	**—**	**20**
Ending balance	**$ 73**	**$ 5**	**$ 19**	**$ 2**	**$ —**	**$ 23**	**$ (1)**	**$ 121**

[1] Includes $3 million allowance for credit losses on Fund Finance loans and $2 million on other loans.

[2] Related to the sale of leveraged loans in 2022.

	Year Ended December 31, 2021							
	Commercial and Financial							
(In millions)	Leveraged Loans	Other Loans[1]	Commercial Real Estate	Available-for-sale securities	Held-to-Maturity Securities	Off-Balance Sheet Commitments	All Other	Total
Allowance for credit losses:								
Beginning balance	$ 97	$ 17	$ 8	$ —	$ 3	$ 22	$ 1	$ 148
Charge-offs[2]	(2)	—	—	—	—	—	—	(2)
Provision	(29)	(6)	6	2	(3)	(2)	(1)	(33)
FX translation	(5)	1	—	—	—	(1)	—	(5)
Ending balance	$ 61	$ 12	$ 14	$ 2	$ —	$ 19	$ —	$ 108

[1] Includes $11 million allowance for credit losses on Fund Finance loans and $1 million on other loans.

[2] Related to the sale of leveraged loans in 2021.

Loans are reviewed on a regular basis, and any provisions for credit losses that are recorded reflect management's estimate of the amount necessary to maintain the allowance for loan losses at a level considered appropriate to absorb expected credit losses in the loan portfolio. We recorded a $20 million provision for credit losses in 2022, due to a downward shift in management's economic outlook that was partially offset by a reduction in overall loan portfolio risk. Allowance estimates remain subject to continued model and economic uncertainty and management may use qualitative adjustments in the allowance estimates. If future data and forecasts deviate relative to the forecasts utilized to determine our allowance for credit losses as of December 31, 2022, or if credit risk migration is higher or lower than forecasted for reasons independent of the economic forecast, our allowance for credit losses will also change.

Note 5. Goodwill and Other Intangible Assets

Goodwill represents the excess of the cost of an acquisition over the fair value of the net tangible and other intangible assets acquired. Other intangible assets represent purchased long-lived intangible assets, primarily client relationships, that can be distinguished from goodwill because of contractual rights or because the asset can be exchanged on its own or in combination with a related contract, asset or liability. Goodwill is not amortized, but is subject to at least annual evaluation for impairment. Other intangible assets, which are subject to evaluation for impairment, are mainly related to client relationships, which are amortized on a straight-line basis over periods ranging from five to twenty years, technology assets, which are amortized on a straight-line basis over periods ranging from three to ten years, and core deposit intangible assets, which are amortized on a straight-line basis over periods ranging from sixteen to twenty-two years, with such amortization recorded in other expenses in our consolidated statement of income.

Impairment of goodwill is deemed to exist if the carrying value of a reporting unit, including its allocation of goodwill and other intangible assets, exceeds its estimated fair value. Impairment of other intangible assets is deemed to exist if the balance of the other intangible asset exceeds the cumulative expected undiscounted net cash inflows related to the asset over its remaining estimated useful life. If these reviews determine that goodwill or other intangible assets are impaired, the value of the goodwill or the other intangible asset is written down through a charge to other expenses in our consolidated statement of income. There were no impairments to goodwill or other intangible assets in 2022, 2021 and 2020.

The following table presents changes in the carrying amount of goodwill during the periods indicated:

(In millions)	Investment Servicing[1]	Investment Management	Total
Goodwill:			
Ending balance December 31, 2020	$ 7,413	$ 270	$ 7,683
Acquisitions[2]	66	—	66
Divestitures[3]	(17)	—	(17)
Foreign currency translation	(108)	(3)	(111)
Ending balance December 31, 2021	7,354	267	7,621
Acquisitions[2]	**3**	**—**	**3**
Foreign currency translation	**(125)**	**(4)**	**(129)**
Ending balance December 31, 2022	**$ 7,232**	**$ 263**	**$ 7,495**

[1] Investment Servicing includes our acquisition of CRD.

[2] Investment Servicing includes our acquisitions of the depositary bank and fund administrator activities of Fideuram Bank Luxembourg, a subsidiary of Intesa Sanpaolo, in the first quarter of 2021, with a total purchase price of approximately EUR 220 million or approximately $258 million, and our acquisition of Mercatus, Inc. in the third quarter of 2021, with a total purchase price of approximately $88 million. We accounted for these acquisitions as business combinations and, in accordance with ASC Topic 805, Business Combinations, we have recorded assets acquired and liabilities assumed at their respective fair values as of the acquisition date.

[3] In the second quarter of 2021, we sold a majority share of our WMS business.

The following table presents changes in the net carrying amount of other intangible assets during the periods indicated:

(In millions)	Investment Servicing[1]	Investment Management	Total
Other intangible assets:			
Ending balance December 31, 2020	$ 1,733	$ 94	$ 1,827
Acquisitions[2]	264	—	264
Amortization	(221)	(24)	(245)
Foreign currency translation	(30)	—	(30)
Ending balance December 31, 2021	1,746	70	1,816
Amortization	**(217)**	**(21)**	**(238)**
Foreign currency translation	**(34)**	**—**	**(34)**
Ending balance December 31, 2022	**$ 1,495**	**$ 49**	**$ 1,544**

[1] Investment Servicing includes our acquisition of CRD.

[2] Investment Servicing includes our acquisitions of the depositary bank and fund administrator activities of Fideuram Bank Luxembourg, a subsidiary of Intesa Sanpaolo, in the first quarter of 2021, with a total purchase price of approximately EUR 220 million or approximately $258 million, and our acquisition of Mercatus, Inc. in the third quarter of 2021, with a total purchase price of approximately $88 million. We accounted for these acquisitions as business combinations and, in accordance with ASC Topic 805, Business Combinations, we have recorded assets acquired and liabilities assumed at their respective fair values as of the acquisition date.

The following table presents the gross carrying amount, accumulated amortization and net carrying amount of other intangible assets by type as of the dates indicated:

December 31, 2022 (In millions)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Other intangible assets:			
Client relationships	**$ 2,728**	**$ (1,626)**	**$ 1,102**
Technology	**402**	**(178)**	**224**
Core deposits	**683**	**(477)**	**206**
Other	**84**	**(72)**	**12**
Total	**$ 3,897**	**$ (2,353)**	**$ 1,544**

December 31, 2021 (In millions)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Other intangible assets:			
Client relationships	$ 2,786	$ (1,497)	$ 1,289
Technology	403	(142)	261
Core deposits	696	(451)	245
Other	96	(75)	21
Total	$ 3,981	$ (2,165)	$ 1,816

Amortization expense related to other intangible assets was $238 million, $245 million and $234 million in 2022, 2021 and 2020, respectively.

Expected future amortization expense for other intangible assets recorded as of December 31, 2022 is as follows:

(In millions) Years Ended December 31,	Future Amortization
2023	**$ 241**
2024	**238**
2025	**210**
2026	**201**
2027	**167**

Note 6. Other Assets

The following table presents the components of other assets as of the dates indicated:

(In millions)	December 31, 2022	December 31, 2021
Securities borrowed[1]	**$ 16,489**	$ 22,300
Derivative instruments, net	**7,664**	4,108
Bank-owned life insurance	**3,649**	3,554
Investments in joint ventures and other unconsolidated entities[2]	**3,245**	3,162
Collateral, net	**1,833**	1,011
Deferred tax assets, net of valuation allowance[3]	**1,127**	254
Prepaid expenses	**558**	612
Right-of-use assets	**500**	542
Accounts receivable	**404**	236
Receivable for securities settlement	**383**	213
Income taxes receivable	**235**	317
Deposits with clearing organizations	**62**	62
Other[4]	**1,753**	1,244
Total	**$ 37,902**	$ 37,615

[1] Refer to Note 11, for further information on the impact of collateral on our financial statement presentation of securities borrowing and securities lending transactions.

[2] Includes equity securities without readily determinable fair values that are accounted for under the ASC 321 measurement alternative of $179 million and $109 million as of December 31, 2022 and December 31, 2021, respectively. For the year ended December 31, 2022, $54 million of upward adjustments resulting from observable pricing changes were recognized in other fee revenue related to such equity securities.

[3] Deferred tax assets and liabilities recorded in our consolidated statement of condition are netted within the same tax jurisdiction.

[4] Includes advances of $1,201 million and $544 million as of December 31, 2022 and 2021, respectively.

Note 7. Deposits

We had $2.98 billion and $1.31 billion of time deposits outstanding, of which $0.10 billion and $1.31 billion were non-U.S. time deposits as of December 31, 2022 and 2021, respectively. Time deposits included amounts in excess of the FDIC insurance limits, or other uninsured accounts not subject to any country specific deposit insurance limits, of $2.97 billion and $1.31 billion as of December 31, 2022 and 2021, respectively. As of December 31, 2022, uninsured time deposits of $0.50 billion were scheduled to mature in less than three months, $1.50 billion in three to six months, and $0.98 billion in six to twelve months. Demand deposit overdrafts of $2.80 billion and $3.11 billion were included as loan balances at December 31, 2022 and 2021, respectively.

Note 8. Short-Term Borrowings

Our short-term borrowings include securities sold under repurchase agreements, short-term borrowings associated with our tax-exempt investment program (more fully described in Note 14) and other short-term borrowings.

Collectively, short-term borrowings had weighted-average interest rates of 0.83% and 0.31% in 2022 and 2021, respectively.

The following table presents information with respect to the amounts outstanding and weighted-average interest rates of the primary components of our short-term borrowings as of and for the years ended December 31:

(Dollars in millions)	Securities Sold Under Repurchase Agreements			Tax-Exempt Investment Program			Other		
	2022	2021	2020	2022	2021	2020	2022	2021	2020
Balance as of December 31	**$ 1,177**	$ 1,575	$ 3,413	**$ —**	$ —	$ 616	**$ 2,000**	$ —	$ 3,302
Maximum outstanding as of any month-end	**11,517**	1,575	5,373	**—**	616	823	**8,525**	—	25,665
Average outstanding during the year	**3,633**	667	2,615	**—**	523	771	**696**	315	8,251
Weighted-average interest rate as of year-end	**2.31 %**	.00 %	.00 %	**— %**	— %	.23 %	**4.18 %**	.00 %	1.35 %
Weighted-average interest rate during the year	**.39**	(.00)	.14	**—**	.31	.78	**.01**	—	1.23

Obligations to repurchase securities sold are recorded as a liability in our consolidated statement of condition. Applicable securities with a fair value of $0.96 billion underlying the repurchase agreements remained in our investment securities portfolio as of December 31, 2022.

The following table presents information about these securities and the carrying value of the related repurchase agreements, including accrued interest, as of December 31, 2022.

	Securities Sold		Repurchase Agreements[1]
(In millions)	Amortized Cost	Fair Value	Amortized Cost
Overnight maturity	**$ 986**	**$ 963**	**$ 1,173**

[1] Collateralized by investment securities.

We maintain an agreement with a clearing organization (FICC) that enables us to net securities purchased under resale agreements and sold under repurchase agreements with counterparties that are also members of the clearing organization when specific netting criteria are met. The impact of this netting was $71.02 billion on average in 2022 compared to $62.15 billion in 2021, primarily due to higher FICC repo volumes.

State Street Bank currently maintains a line of credit of CAD 1.40 billion, or approximately $1.03 billion, as of December 31, 2022, to support its Canadian securities processing operations. The line of credit has no stated termination date and is cancellable by either party with prior notice. As of both December 31, 2022 and 2021, there was no balance outstanding on this line of credit.

Note 9. Long-Term Debt

(Dollars in millions)					As of December 31,	
Issuance Date	Maturity Date	Coupon Rate	Seniority	Interest Due Dates	2022	2021
Parent Company and Non-Banking Subsidiary Issuances						
August 18, 2015	August 18, 2025	3.550 %	Senior notes	2/18; 8/18[1]	**$ 1,256**	$ 1,370
May 15, 2013	May 15, 2023[2]	3.100 %	Subordinated notes	5/15; 11/15	**1,006**	1,022
November 19, 2013	November 20, 2023	3.700 %	Senior notes	5/20; 11/20[1]	**985**	1,043
December 15, 2014	December 16, 2024	3.300 %	Senior notes	6/16; 12/16[1]	**962**	1,040
November 1, 2019	November 1, 2025	2.354 %	Fixed-to-floating rate senior notes	5/1; 11/1[1]	**951**	1,019
March 3, 2021	March 3, 2031	2.200 %	Senior subordinated notes	3/3; 9/3	**844**	843
January 24, 2020	January 24, 2030	2.400 %	Senior notes	1/24, 7/24	**797**	803
May 19, 2016	May 19, 2026	2.650 %	Senior notes	5/19; 11/19[1]	**709**	779
August 4, 2022	August 4, 2033	4.164 %	Fixed-to-floating rate senior notes	2/4; 8/4[1]	**677**	—
February 7, 2022	February 7, 2028	2.203 %	Fixed-to-floating rate senior notes	8/7; 2/7	**589**	—
December 3, 2018	December 3, 2029	4.141 %	Fixed-to-floating rate senior notes	6/3; 12/3[1]	**564**	583
November 1, 2019	November 1, 2034[2]	3.031 %	Fixed-to-floating rate senior subordinated notes	5/1; 11/1[1]	**532**	541
April 30, 2007	June 15, 2047	Floating-rate	Junior subordinated debentures	3/15; 6/15; 9/15; 12/15	**500**	499
November 4, 2022	November 4, 2026	5.751 %	Fixed-to-floating rate senior notes	5/4; 11/4[1]	**498**	—
March 30, 2020	March 30, 2031	3.152 %	Fixed-to-floating rate senior notes	3/30, 9/30	**498**	498
November 4, 2022	November 4, 2028	5.820 %	Fixed-to-floating rate senior notes	5/4; 11/4[1]	**497**	—
May 13, 2022	May 13, 2033	4.421 %	Fixed-to-floating rate senior notes	11/13; 5/13	**497**	—
November 18, 2021	November 18, 2027	1.684 %	Fixed-to-floating rate senior notes	5/18; 11/18	**497**	497
December 3, 2018	December 3, 2024	3.776 %	Fixed-to-floating rate senior notes	6/3; 12/3[1]	**492**	523
March 30, 2020	March 30, 2026	2.901 %	Fixed-to-floating rate senior notes	6/3; 12/3[1]	**473**	498
February 7, 2022	February 7, 2033	2.623 %	Fixed-to-floating rate senior notes	8/7; 2/7	**466**	—
February 7, 2022	February 7, 2026	1.746 %	Fixed-to-floating rate senior notes	8/7; 2/7	**280**	—
June 21, 1996	June 15, 2026[3]	7.350 %	Senior notes	6/15; 12/15	**150**	150
May 15, 1998	May 15, 2028	Floating-rate	Junior subordinated debentures	2/15; 5/15; 8/15; 11/15[1]	**100**	100
May 15, 2017	May 15, 2023[4]	2.653 %	Fixed-to-floating rate senior notes	5/15; 11/15	**—**	754
March 30, 2020	March 30, 2023[4]	2.825 %	Fixed-to-floating rate senior notes	3/30, 9/30	**—**	749
Parent Company and Banking Subsidiaries						
Long-term finance leases					**176**	164
Total long-term debt					**$ 14,996**	$ 13,475

[1] We have entered into interest rate swap agreements, recorded as fair value hedges, to modify our interest expense on these senior and subordinated notes from a fixed rate to a floating rate. As of December 31, 2022 and 2021, the carrying value of long-term debt associated with these fair value hedges was $282 million and $450 million, respectively. Refer to Note 10 for additional information about fair value hedges.

[2] The subordinated notes qualify for inclusion in tier 2 regulatory capital under current federal regulatory capital guidelines.

[3] We may not redeem notes prior to their maturity.

[4] We redeemed the notes prior to original maturity date.

Parent Company and Banking Subsidiaries

As of December 31, 2022, long-term finance leases included $176 million related to information technology equipment leases. As of December 31, 2021, long-term finance leases included $164 million related to information technology equipment leases entered into in 2021, and our One Lincoln Street headquarters building and related underground parking garage. Refer to Note 20 for additional information.

Note 10. Derivative Financial Instruments

We use derivative financial instruments to support our clients' needs and to manage our interest rate and currency risks. These financial instruments consist of FX contracts such as forwards, futures and options contracts; interest rate contracts such as interest rate swaps (cross currency and single currency) and futures; and other derivative contracts. Derivative instruments used for risk management purposes that are highly effective in offsetting the risk being hedged are generally designated as hedging instruments in hedge accounting relationships, while others are economic hedges and not designated in hedge accounting relationships. Derivatives in hedge accounting relationships are disclosed according to the type of hedge, such as, fair value, cash flow, or net investment. Derivatives designated as hedging instruments in hedge accounting relationships are carried at fair value with change in fair value recognized in the consolidated statement of income or other comprehensive income (OCI), as appropriate. Derivatives not designated in hedge accounting relationships include those derivatives entered into to support client needs and derivatives used to manage interest rate or foreign currency risk associated with certain assets and liabilities. Such derivatives are carried at fair value with changes in fair value recognized in the consolidated statement of income.

Derivatives Not Designated as Hedging Instruments

We provide foreign exchange forward contracts and options in support of our client needs, and also act as a dealer in the currency markets. As part of our trading activities, we assume positions in both the foreign exchange and interest rate markets by buying and selling cash instruments and using derivative financial instruments, including foreign exchange forward contracts, foreign exchange and interest rate options, interest rate forward contracts, and interest rate futures. The entire change in the fair value of our non-hedging derivatives utilized in our trading activities are recorded in foreign exchange trading services revenue, and the entire change in fair value of our non-hedging derivatives utilized in our asset-and-liability management activities are recorded in net interest income.

We enter into stable value wrap derivative contracts with unaffiliated stable value funds that allow a stable value fund to provide book value coverage to its participants. These derivatives contracts qualify as guarantees as described in Note 12.

We grant deferred cash awards to certain of our employees as part of our employee incentive compensation plans. We account for these awards as derivative financial instruments, as the underlying referenced shares are not equity instruments of ours. The fair value of these derivatives is referenced to the value of units in State Street-sponsored investment funds or funds sponsored by other unrelated entities. We re-measure these derivatives to fair value quarterly, and record the change in value in compensation and employee benefits expenses in our consolidated statement of income.

Derivatives Designated as Hedging Instruments

In connection with our asset-and-liability management activities, we use derivative financial instruments to manage our interest rate risk and foreign currency risk for certain assets and liabilities. At both the inception of the hedge and on an ongoing basis, we formally assess and document the effectiveness of a derivative designated in a hedging relationship and the likelihood that the derivative will be an effective hedge in future periods. We discontinue hedge accounting prospectively when we determine that the derivative is no longer highly effective in offsetting changes in fair value or cash flows of the underlying risk being hedged, the derivative expires, terminates or is sold, or management discontinues the hedge designation.

The risk management objective of a highly effective hedging strategy that qualifies for hedge accounting must be formally documented. The hedge documentation includes the derivative hedging instrument, the asset or liability or forecasted transaction, type of risk being hedged and method for assessing hedge effectiveness of the derivative prospectively and retrospectively. We use quantitative methods including regression analysis and cumulative dollar offset method, comparing the change in the fair value of the derivative to the change in fair value or the cash flows of the hedged item. We may also utilize qualitative methods such as matching critical terms and evaluation of any changes in those critical terms. Effectiveness is assessed and documented quarterly and if determined that the derivative is not highly effective at hedging the designated risk hedge accounting is discontinued.

Fair Value Hedges

Derivatives designated as fair value hedges are utilized to mitigate the risk of changes in the fair values of recognized assets and liabilities, including long-term debt and AFS securities. We use interest rate contracts in this manner to manage our exposure to changes in the fair value of hedged items caused by changes in interest rates.

Changes in the fair value of the derivative and changes in fair value of the hedged item due to changes in the hedged risk are recognized in earnings in the same line item. If a hedge is terminated, but the hedged item was not derecognized, all remaining adjustments to the carrying amount of the hedged item are amortized over a period that is consistent with the amortization of other discounts or premiums associated with the hedged item.

Cash Flow Hedges

Derivatives designated as cash flow hedges are utilized to offset the variability of cash flows of recognized assets, liabilities or forecasted transactions. We have entered into FX contracts to hedge the change in cash flows attributable to FX movements in foreign currency denominated investment securities. Additionally, we have entered into interest rate swap agreements to hedge the forecasted cash flows associated with LIBOR indexed floating-rate loans. The interest rate swaps synthetically convert the loan interest receipts from a variable-rate to a fixed-rate, thereby mitigating the risk attributable to changes in the LIBOR benchmark rate.

Changes in fair value of the derivatives designated as cash flow hedges are initially recorded in AOCI and then reclassified into earnings in the same period or periods during which the hedged forecasted transaction affects earnings and are presented in the same income statement line item as the earnings effect of the hedged item. If the hedge relationship is terminated, the change in fair value on the derivative recorded in AOCI is reclassified into earnings consistent with the timing of the hedged item. For hedge relationships that are discontinued because a forecasted transaction is not expected to occur according to the original hedge terms, any related derivative values recorded in AOCI are immediately recognized in earnings. The net loss associated with cash flow hedges expected to be reclassified from AOCI within 12 months of December 31, 2022 is approximately $223 million. The maximum length of time over which forecasted cash flows are hedged is 5 years.

Net Investment Hedges

Derivatives categorized as net investment hedges are entered into to protect the net investment in our foreign operations against adverse changes in exchange rates. We use FX forward contracts to convert the foreign currency risk to U.S. dollars to mitigate our exposure to fluctuations in FX rates. The changes in fair value of the FX forward contracts are recorded, net of taxes, in the foreign currency translation component of OCI.

The following table presents the aggregate contractual, or notional, amounts of derivative financial instruments including those entered into for trading and asset-and-liability management activities as of the dates indicated:

(In millions)	December 31, 2022	December 31, 2021
Derivatives not designated as hedging instruments:		
Interest rate contracts:		
Futures	**$ 8,683**	$ 9,604
Foreign exchange contracts:		
Forward, swap and spot	**2,267,221**	2,569,449
Options purchased	**607**	328
Options written	**445**	210
Futures	**1,550**	2,359
Other:		
Stable value contracts[1]	**31,391**	32,868
Deferred value awards[2]	**300**	308
Derivatives designated as hedging instruments:		
Interest rate contracts:		
Swap agreements	**22,566**	15,100
Foreign exchange contracts:		
Forward and swap	**8,213**	6,700

[1] The notional value of the stable value contracts represents our maximum exposure. However, exposure to various stable value contracts is generally contractually limited to substantially lower amounts than the notional values.

[2] Represents grants of deferred value awards to employees; refer to discussion in this note under "Derivatives Not Designated as Hedging Instruments."

Notional amounts are provided here as an indication of the volume of our derivative activity and serve as a reference to calculate the fair values of the derivative.

The following table presents the fair value of derivative financial instruments, excluding the impact of master netting agreements, recorded in our consolidated statement of condition as of the dates indicated. Fair value measurement for derivatives is further discussed in Note 2, and the impact of master netting agreements is provided in Note 11.

	Derivative Assets[1]		Derivative Liabilities[2]	
(In millions)	December 31, 2022	December 31, 2021	December 31, 2022	December 31, 2021
Derivatives not designated as hedging instruments:				
Foreign exchange contracts	**$ 26,081**	$ 15,126	**$ 25,407**	$ 15,790
Other derivative contracts	**—**	—	**216**	301
Total	**$ 26,081**	$ 15,126	**$ 25,623**	$ 16,091
Derivatives designated as hedging instruments:				
Foreign exchange contracts	**$ 105**	$ 59	**$ 342**	$ 35
Interest rate contracts	**—**	2	**1**	—
Total	**$ 105**	$ 61	**$ 343**	$ 35

[1] Derivative assets are included within other assets in our consolidated statement of condition.

[2] Derivative liabilities are included within other liabilities in our consolidated statement of condition.

The following table presents the impact of our use of derivative financial instruments on our consolidated statement of income for the periods indicated:

		Years Ended December 31,		
		2022	2021	2020
(In millions)	Location of Gain (Loss) on Derivative in Consolidated Statement of Income	Amount of Gain (Loss) on Derivative Recognized in Consolidated Statement of Income		
Derivatives not designated as hedging instruments:				
Foreign exchange contracts	Foreign exchange trading services revenue	**$ 938**	$ 811	$ 922
Foreign exchange contracts	Interest expense	**(20)**	68	63
Interest rate contracts	Foreign exchange trading services revenue	**3**	3	3
Interest rate contracts	Other fee revenue	**1**	—	—
Other derivative contracts[1]	Compensation and employee benefits	**(89)**	(332)	(189)
Total		**$ 833**	$ 550	$ 799

[1] Amount in 2021 reflects a deferred compensation expense acceleration of $147 million associated with an amendment of certain outstanding cash settled deferred incentive compensation awards.

The following tables show the carrying amount and associated cumulative basis adjustments related to the application of hedge accounting that is included in the carrying amount of hedged assets and liabilities in fair value hedging relationships:

	December 31, 2022		
		Cumulative Fair Value Hedging Adjustment Increasing (Decreasing) the carrying amount	
(In millions)	Carrying Amount of Hedged Assets/Liabilities	Active	De-designated[1]
Long-term debt	**$ 12,513**	**$ (644)**	**$ 362**
Available-for-sale securities[2][3]	**9,801**	**(675)**	**8**

	December 31, 2021		
		Cumulative Fair Value Hedging Adjustment Increasing (Decreasing) the carrying amount	
(In millions)	Carrying Amount of Hedged Assets/Liabilities	Active	De-designated[1]
Long-term debt	$ 9,026	$ (64)	$ 514
Available-for-sale securities	3,551	—	24

[1] Represents hedged items no longer designated in qualifying fair value hedging relationships for which an associated basis adjustment exists at the balance sheet date.

[2] Included in these amounts is the amortized cost of the prepayable financial assets designated in last-of-layer hedging relationships (hedged item is the last layer of a closed portfolio of prepayable financial assets expected to remain outstanding at the end of the hedging relationship). As of December 31, 2022, the amortized cost of the closed portfolios used in these hedging relationships was $207 million, of which $64 million, was designated in the last-of-layer hedging relationship. As of December 31, 2022, the cumulative adjustment associated with these hedging relationships was ($4) million.

[3] Carrying amount represents amortized cost.

As of December 31, 2022 and 2021, the total notional amount of the interest rate swaps of fair value hedges was $20.32 billion and $6.95 billion, respectively.

The following tables present the impact of our use of derivative financial instruments on our consolidated statement of income for the periods indicated:

(In millions)	Location of Gain (Loss) on Derivative in Consolidated Statement of Income	Years Ended December 31, Amount of Gain (Loss) on Derivative Recognized in Consolidated Statement of Income 2022	2021	2020	Hedged Item in Fair Value Hedging Relationship	Location of Gain (Loss) on Hedged Item in Consolidated Statement of Income	Years Ended December 31, Amount of Gain (Loss) on Hedged Item Recognized in Consolidated Statement of Income 2022	2021	2020
Derivatives designated as fair value hedges:									
Interest rate contracts	Net interest income	**$ 676**	$ 14	$ 1	Available-for-sale securities	Net interest income	**$ (676)**	$ (19)	$ (4)
Interest rate contracts	Net interest income	**(1,160)**	(76)	566	Long-term debt	Net interest income	**1,160**	75	(559)
Total		**$ (484)**	$ (62)	$ 567			**$ 484**	$ 56	$ (563)

(In millions)	Years Ended December 31, Amount of Gain or (Loss) Recognized in Other Comprehensive Income on Derivative 2022	2021	2020	Location of Gain or (Loss) Reclassified from Accumulated Other Comprehensive Income into Income	Years Ended December 31, Amount of Gain or (Loss) Reclassified from Accumulated Other Comprehensive Income into Income 2022	2021	2020
Derivatives designated as cash flow hedges:							
Interest rate contracts	**$ (598)**	$ (78)	$ 176	Net interest income	**$ (43)**	$ 84	$ 49
Foreign exchange contracts	**156**	91	(22)	Net interest income	**92**	11	23
Total derivatives designated as cash flow hedges	**$ (442)**	$ 13	$ 154		**$ 49**	$ 95	$ 72
Derivatives designated as net investment hedges:							
Foreign exchange contracts	**$ 291**	$ 272	$ (250)	Gains (Losses) related to investment securities, net	**$ —**	$ —	$ —
Total derivatives designated as net investment hedges	**291**	272	(250)		**—**	—	—
Total	**$ (151)**	$ 285	$ (96)		**$ 49**	$ 95	$ 72

Derivatives Netting and Credit Contingencies

Netting

Derivatives receivable and payable as well as cash collateral from the same counterparty are netted in the consolidated statement of condition for those counterparties with whom we have legally binding master netting agreements in place. In addition to cash collateral received and transferred presented on a net basis, we also receive and transfer collateral in the form of securities, which mitigate credit risk but are not eligible for netting. Additional information on netting is provided in Note 11.

Credit Contingencies

Certain of our derivatives are subject to master netting agreements with our derivative counterparties containing credit risk-related contingent features, which requires us to maintain an investment grade credit rating with the various credit rating agencies. If our rating falls below investment grade, we would be in violation of the provisions, and counterparties to the derivatives could request immediate payment or demand full overnight collateralization on derivatives instruments in liability positions. The aggregate fair value of all derivatives with credit contingent features and in a net liability position as of December 31, 2022 totaled approximately $3.06 billion, against which we provided $1.38 billion of collateral in the normal course of business. If our credit related contingent features underlying these agreements were triggered as of December 31, 2022, the maximum additional collateral we would be required to post to our counterparties is approximately $1.68 billion.

Note 11. Offsetting Arrangements

Certain of our transactions are subject to master netting agreements that allow us to net receivables and payables by contract and settlement type. For those legally enforceable contracts, we net receivables and payables with the same counterparty on our statement of condition.

In addition to netting receivables and payables with our derivatives counterparty where a legal and enforceable netting arrangement exists, we also net related cash collateral received and transferred up to the fair value exposure amount.

With respect to our securities financing arrangements, we net balances outstanding on our consolidated statement of condition for those transactions that met the netting requirements and were transacted under a legally enforceable netting arrangement with the counterparty.

Securities received as collateral under securities financing or derivatives transactions can be transferred as collateral in many instances. The securities received as proceeds under secured lending transactions are recorded at a value that approximates fair value in other assets in our consolidated statement of condition with a related liability to return the collateral, if we have the right to transfer or re-pledge the collateral.

As of December 31, 2022 and 2021, the value of securities received as collateral from third parties where we are permitted to transfer or re-pledge the securities totaled $8.14 billion and $1.60 billion, respectively, and the fair value of the portion that had been transferred or re-pledged as of the same dates was $3.63 billion and nil, respectively.

The following tables present information about the offsetting of assets related to derivative contracts and secured financing transactions, as of the dates indicated:

Assets:	**December 31, 2022**				
				Gross Amounts Not Offset in Statement of Condition	
(In millions)	**Gross Amounts of Recognized Assets[1][2]**	**Gross Amounts Offset in Statement of Condition[3]**	**Net Amounts of Assets Presented in Statement of Condition**	**Cash and Securities Received[4]**	**Net Amount[5]**
Derivatives:					
Foreign exchange contracts	$ 26,186	$ (15,224)	$ 10,962	$ —	$ 10,962
Interest rate contracts[6]	—	—	—	—	—
Cash collateral and securities netting	NA	(3,298)	(3,298)	(1,717)	(5,015)
Total derivatives	26,186	(18,522)	7,664	(1,717)	5,947
Other financial instruments:					
Resale agreements and securities borrowing[7][8]	125,797	(104,093)	21,704	(20,960)	744
Total derivatives and other financial instruments	$ 151,983	$ (122,615)	$ 29,368	$ (22,677)	$ 6,691

Assets:	December 31, 2021				
				Gross Amounts Not Offset in Statement of Condition	
(In millions)	Gross Amounts of Recognized Assets[1][2]	Gross Amounts Offset in Statement of Condition[3]	Net Amounts of Assets Presented in Statement of Condition	Cash and Securities Received[4]	Net Amount[5]
Derivatives:					
Foreign exchange contracts	$ 15,185	$ (9,113)	$ 6,072	$ —	$ 6,072
Interest rate contracts[6]	2	—	2	—	2
Cash collateral and securities netting	NA	(1,966)	(1,966)	(723)	(2,689)
Total derivatives	15,187	(11,079)	4,108	(723)	3,385
Other financial instruments:					
Resale agreements and securities borrowing[7][8]	102,375	(77,063)	25,312	(25,096)	216
Total derivatives and other financial instruments	$ 117,562	$ (88,142)	$ 29,420	$ (25,819)	$ 3,601

[1] Amounts include all transactions regardless of whether or not they are subject to an enforceable netting arrangement.

[2] Refer to Note 1 and Note 2 for additional information about the measurement basis of derivative instruments.

[3] Amounts subject to netting arrangements which have been determined to be legally enforceable and eligible for netting in the consolidated statement of condition.

[4] Includes securities in connection with our securities borrowing transactions.

[5] Includes amounts secured by collateral not determined to be subject to enforceable netting arrangements.

[6] Variation margin payments presented as settlements rather than collateral.

[7] Included in the $21.70 billion as of December 31, 2022 were $5.21 billion of resale agreements and $16.49 billion of collateral provided related to securities borrowing. Included in the $25.31 billion as of December 31, 2021 were $3.01 billion of resale agreements and $22.30 billion of collateral provided related to securities borrowing. Resale agreements and collateral provided related to securities borrowing were recorded in securities purchased under resale agreements and other assets, respectively, in our consolidated statement of condition. Refer to Note 12 for additional information with respect to principal securities finance transactions.

[8] Offsetting of resale agreements primarily relates to our involvement in FICC, where we settle transactions on a net basis for payment and delivery through the Fedwire system.

NA Not applicable

The following tables present information about the offsetting of liabilities related to derivative contracts and secured financing transactions, as of the dates indicated:

Liabilities:	December 31, 2022				
				Gross Amounts Not Offset in Statement of Condition	
(In millions)	Gross Amounts of Recognized Liabilities[1][2]	Gross Amounts Offset in Statement of Condition[3]	Net Amounts of Liabilities Presented in Statement of Condition	Cash and Securities Received[4]	Net Amount[5]
Derivatives:					
Foreign exchange contracts	**$ 25,749**	**$ (15,224)**	**$ 10,525**	**$ —**	**$ 10,525**
Interest rate contracts[6]	**1**	**—**	**1**	—	**1**
Other derivative contracts	**216**	**—**	**216**	—	**216**
Cash collateral and securities netting	**NA**	**(2,727)**	**(2,727)**	**(908)**	**(3,635)**
Total derivatives	**25,966**	**(17,951)**	**8,015**	**(908)**	**7,107**
Other financial instruments:					
Repurchase agreements and securities lending[7][8]	**111,653**	**(104,093)**	**7,560**	**(6,433)**	**1,127**
Total derivatives and other financial instruments	**$ 137,619**	**$ (122,044)**	**$ 15,575**	**$ (7,341)**	**$ 8,234**

Liabilities:	December 31, 2021				
				Gross Amounts Not Offset in Statement of Condition	
(In millions)	Gross Amounts of Recognized Liabilities[1][2]	Gross Amounts Offset in Statement of Condition[3]	Net Amounts of Liabilities Presented in Statement of Condition	Cash and Securities Received[4]	Net Amount[5]
Derivatives:					
Foreign exchange contracts	$ 15,825	$ (9,113)	$ 6,712	$ —	$ 6,712
Interest rate contracts[6]	—	—	—	—	—
Other derivative contracts	301	—	301	—	301
Cash collateral and securities netting	NA	(1,282)	(1,282)	(989)	(2,271)
Total derivatives	16,126	(10,395)	5,731	(989)	4,742
Other financial instruments:					
Repurchase agreements and securities lending[7][8]	82,674	(77,063)	5,611	(4,066)	1,545
Total derivatives and other financial instruments	$ 98,800	$ (87,458)	$ 11,342	$ (5,055)	$ 6,287

[1] Amounts include all transactions regardless of whether or not they are subject to an enforceable netting arrangement.

[2] Refer to Note 1 and Note 2 for additional information about the measurement basis of derivative instruments.

[3] Amounts subject to netting arrangements which have been determined to be legally enforceable and eligible for netting in the consolidated statement of condition.

[4] Includes securities provided in connection with our securities lending transactions.

[5] Includes amounts secured by collateral not determined to be subject to enforceable netting arrangements.

[6] Variation margin payments presented as settlements rather than collateral.

[7] Included in the $7.56 billion as of December 31, 2022 were $1.18 billion of repurchase agreements and $6.38 billion of collateral received related to securities lending transactions. Included in the $5.61 billion as of December 31, 2021 were $1.57 billion of repurchase agreements and $4.04 billion of collateral received related to securities lending transactions. Repurchase agreements and collateral received related to securities lending were recorded in securities sold under repurchase agreements and accrued expenses and other liabilities, respectively, in our consolidated statement of condition. Refer to Note 12 for additional information with respect to principal securities finance transactions.

[8] Offsetting of repurchase agreements primarily relates to our involvement in FICC, where we settle transactions on a net basis for payment and delivery through the Fedwire system.

NA Not applicable

The securities transferred under resale and repurchase agreements typically are U.S. Treasury, agency and agency MBS. In our principal securities borrowing and lending arrangements, the securities transferred are predominantly equity securities and some corporate debt securities. The fair value of the securities transferred may increase in value to an amount greater than the amount received under our repurchase and securities lending arrangements, which exposes us to counterparty risk. We require the review of the price of the underlying securities in relation to the carrying value of the repurchase agreements and securities lending arrangements on a daily basis and when appropriate, adjust the cash or security to be obtained or returned to counterparties that is reflective of the required collateral levels.

The following table summarizes our repurchase agreements and securities lending transactions by category of collateral pledged and remaining maturity of these agreements as of the periods indicated:

	As of December 31, 2022					As of December 31, 2021				
(In millions)	Overnight and Continuous	Up to 30 Days	30-90 Days	Greater than 90 Days	Total	Overnight and Continuous	Up to 30 Days	30-90 Days	Greater than 90 Days	Total
Repurchase agreements:										
U.S. Treasury and agency securities	**$ 100,899**	**$ —**	**$ 200**	**$ —**	**$ 101,099**	$ 75,266	$ —	$ —	$ —	$ 75,266
Non-US sovereign debt	**702**	**—**	**—**	**—**	**702**	—	—	—	—	—
Total	**101,601**	**—**	**200**	**—**	**101,801**	75,266	—	—	—	75,266
Securities lending transactions:										
US Treasury and agency securities	**44**	**—**	**—**	**—**	**44**	—	—	—	—	—
Corporate debt securities	**67**	**—**	**—**	**—**	**67**	92	—	—	—	92
Equity securities	**4,509**	**—**	**—**	**1,606**	**6,115**	5,964	24	11	1,316	7,315
Other[1]	**3,626**	**—**	**—**	**—**	**3,626**	1	—	—	—	1
Total	**8,246**	**—**	**—**	**1,606**	**9,852**	6,057	24	11	1,316	7,408
Gross amount of recognized liabilities for repurchase agreements and securities lending	**$ 109,847**	**$ —**	**$ 200**	**$ 1,606**	**$ 111,653**	$ 81,323	$ 24	$ 11	$ 1,316	$ 82,674

[1] Represents a security interest in underlying client assets related to our enhanced custody business, which assets clients have allowed us to transfer and re-pledge.

Note 12. Commitments and Guarantees

The following table presents the aggregate gross contractual amounts of our off-balance sheet commitments and off-balance sheet guarantees as of the dates indicated:

(In millions)	December 31, 2022	December 31, 2021
Commitments:		
Unfunded credit facilities	**$ 31,208**	$ 33,026
Guarantees[1]:		
Indemnified securities financing	**$ 348,924**	$ 385,740
Standby letters of credit	**$ 2,125**	$ 3,237

[1] The potential losses associated with these guarantees equal the gross contractual amounts and do not consider the value of any collateral or reflect any participations to independent third parties.

Unfunded Credit Facilities

Unfunded credit facilities consist primarily of liquidity facilities provided to our fund and municipal counterparties, as well as commitments to purchase commercial real estate and leveraged loans that have not yet settled.

As of December 31, 2022, approximately 77% of our unfunded commitments to extend credit expire within one year. Since many of these commitments are expected to expire or renew without being drawn upon, the gross contractual amounts do not necessarily represent our future cash requirements.

Indemnified Securities Financing

On behalf of our clients, we lend their securities, as agent, to brokers and other institutions. In most circumstances, we indemnify our clients for the fair market value of those securities against a failure of the borrower to return such securities. We require the borrowers to maintain collateral in an amount in excess of 100% of the fair market value of the securities borrowed. Securities on loan and the collateral are revalued daily to determine if additional collateral is necessary or if excess collateral is required to be returned to the borrower. Collateral received in connection with our securities lending services is held by us as agent and is not recorded in our consolidated statement of condition.

The cash collateral held by us as agent is invested on behalf of our clients. In certain cases, the cash collateral is invested in third-party repurchase agreements, for which we indemnify the client against the loss of the principal invested. We require the counterparty to the indemnified repurchase agreement to provide collateral in an amount in excess of 100% of the amount of the repurchase agreement. In our role as agent, the indemnified repurchase agreements and the related collateral held by us are not recorded in our consolidated statement of condition.

The following table summarizes the aggregate fair values of indemnified securities financing and related collateral, as well as collateral invested in indemnified repurchase agreements, as of the dates indicated:

(In millions)	December 31, 2022	December 31, 2021
Fair value of indemnified securities financing	**$ 348,924**	$ 385,740
Fair value of cash and securities held by us, as agent, as collateral for indemnified securities financing	**366,895**	404,121
Fair value of collateral for indemnified securities financing invested in indemnified repurchase agreements	**54,114**	61,560
Fair value of cash and securities held by us or our agents as collateral for investments in indemnified repurchase agreements	**57,903**	67,014

In certain cases, we participate in securities finance transactions as a principal. As a principal, we borrow securities from the lending client and then lend such securities to the subsequent borrower, either our client or a broker/dealer. Our right to receive and obligation to return collateral in connection with our securities lending transactions are recorded in other assets and other liabilities, respectively, in our consolidated statement of condition. As of December 31, 2022 and 2021, we had approximately $16.49 billion and $22.30 billion, respectively, of collateral provided and approximately $6.38 billion and $4.04 billion, respectively, of collateral received from clients in connection with our participation in principal securities finance transactions.

Stable Value Protection

Stable value funds wrapped by us are high quality diversified portfolios of short intermediate duration fixed-income investments. Stable value contracts are derivative contracts that also qualify as guarantees. The notional amount under non-hedging derivatives, provided in Note 10, generally represents our maximum exposure under these derivatives contracts. However, exposure to various stable value contracts is contractually limited to substantially lower amounts than the notional values, which represent the total assets of the stable value funds.

Standby Letters of Credit

Standby letters of credit provide credit enhancement to our municipal clients to support the issuance of capital markets financing.

FICC Guarantee

As a sponsoring member in the FICC member program, we provide a guarantee to FICC in the event a customer fails to perform its obligations under a transaction. In order to minimize the risk associated with this guarantee, sponsored members acting as

buyers generally grant a security interest in the subject securities received under and held on their behalf by State Street.

Additionally, as a member of FICC, we may be required to pay a pro rata share of the losses incurred by the organization and provide liquidity support in the event of the default of another member to the extent that the defaulting member's clearing fund obligation and the prescribed loss allocation to FICC is depleted. It is difficult to estimate our maximum possible exposure under the membership agreement, since this would require an assessment of future claims that may be made against us that have not yet occurred. At December 31, 2022 and 2021, we did not record any liabilities under these arrangements.

For additional information on our repurchase and reverse repurchase agreements, please refer to Note 11 to the consolidated financial statements in this Form 10-K.

Note 13. Contingencies

Legal and Regulatory Matters

In the ordinary course of business, we and our subsidiaries are involved in disputes, litigation, and governmental or regulatory inquiries and investigations, both pending and threatened. These matters, if resolved adversely against us or settled, may result in monetary awards or payments, fines and penalties or require changes in our business practices. The resolution or settlement of these matters is inherently difficult to predict. Based on our assessment of these pending matters, we do not believe that the amount of any judgment, settlement or other action arising from any pending matter is likely to have a material adverse effect on our consolidated financial condition. However, an adverse outcome or development in certain of the matters described below could have a material adverse effect on our consolidated results of operations for the period in which such matter is resolved, or an accrual is determined to be required, on our consolidated financial condition, or on our reputation.

We evaluate our needs for accruals of loss contingencies related to legal and regulatory proceedings on a case-by-case basis. When we have a liability that we deem probable, and we deem the amount of such liability can be reasonably estimated as of the date of our consolidated financial statements, we accrue our estimate of the amount of loss. We also consider a loss probable and establish an accrual when we make, or intend to make, an offer of settlement. Once established, an accrual is subject to subsequent adjustment as a result of additional information. The resolution of legal and regulatory proceedings and the amount of reasonably estimable loss (or range thereof) are inherently difficult to predict, especially in the early stages of proceedings. Even if a loss is probable, an amount (or range) of loss might not be reasonably estimated until the later stages of the proceeding due to many factors such as the presence of complex or novel legal theories, the discretion of governmental authorities in seeking sanctions or negotiating resolutions in civil and criminal matters, the pace and timing of discovery and other assessments of facts and the procedural posture of the matter (collectively, "factors influencing reasonable estimates").

As of December 31, 2022, our aggregate accruals for loss contingencies for legal, regulatory and related matters totaled approximately $17 million, including potential fines by government agencies and civil litigation with respect to the matters specifically discussed below. To the extent that we have established accruals in our consolidated statement of condition for probable loss contingencies, such accruals may not be sufficient to cover our ultimate financial exposure associated with any settlements or judgments. Any such ultimate financial exposure, or proceedings to which we may become subject in the future, could have a material adverse effect on our businesses, on our future consolidated financial statements or on our reputation.

As of December 31, 2022, for those matters for which we have accrued probable loss contingencies (including the Invoicing Matter described below) and for other matters for which loss is reasonably possible (but not probable) in future periods, and for which we are able to estimate a range of reasonably possible loss, our estimate of the aggregate reasonably possible loss (in excess of any accrued amounts) ranges up to approximately $45 million. Our estimate with respect to the aggregate 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, which may change quickly and significantly from time to time, particularly if and as we engage with applicable governmental agencies or plaintiffs in connection with a proceeding. Also, the matters underlying the reasonably possible loss will change from time to time. As a result, actual results may vary significantly from the current estimate.

In certain pending matters, it is not currently feasible to reasonably estimate the amount or a range of reasonably possible loss, and such losses, which may be significant, are not included in the estimate of reasonably possible loss discussed above. This is due to, among other factors, the factors influencing reasonable estimates described above. An adverse outcome in one or more of the matters for which we have not estimated the amount or a range of reasonably possible loss, individually or in the aggregate, could have a material adverse effect

on our businesses, on our future consolidated financial statements or on our reputation. Given that our actual losses from any legal or regulatory proceeding for which we have provided an estimate of the reasonably possible loss could significantly exceed such estimate, and given that we cannot estimate reasonably possible loss for all legal and regulatory proceedings as to which we may be subject now or in the future, no conclusion as to our ultimate exposure from current pending or potential legal or regulatory proceedings should be drawn from the current estimate of reasonably possible loss.

The following discussion provides information with respect to significant legal, governmental and regulatory matters.

Invoicing Matter

In 2015, we determined that we had incorrectly invoiced clients for certain expenses. We have reimbursed most of our affected customers for those expenses, and we have implemented enhancements to our billing processes. In connection with our enhancements to our billing processes, we continue to review historical billing practices and may from time to time identify additional remediation. In 2017, we identified an additional area of incorrect expense billing associated with mailing services in our retirement services business. We currently expect the cumulative total of our payments to customers for these invoicing errors, including the error in the retirement services business, to be at least $350 million, all of which has been paid or is accrued. However, we may identify additional remediation costs.

In March 2017, a purported class action was commenced against us alleging that our invoicing practices violated duties owed to retirement plan customers under the Employee Retirement Income Security Act. We have agreed, subject to court approval, to resolve this matter and pay a cost that is within our established accruals for loss contingencies. In addition, we have received a purported class action demand letter alleging that our invoicing practices were unfair and deceptive under Massachusetts law. A class of customers, or particular customers, may assert that we have not paid to them all amounts incorrectly invoiced, and may seek double or treble damages under Massachusetts law.

We resolved potential criminal claims that arose from these matters by entering into a deferred prosecution agreement with the office of the United States Attorney for the District of Massachusetts and paying a $115 million penalty in May 2021. In June 2019, we reached an agreement with the SEC to settle its claims that we violated the recordkeeping provisions of Section 34(b) of the Investment Company Act of 1940 and caused violations of Section 31(a) of the Investment Company Act and Rules 31a-1(a) and 31a-1(b) thereunder in connection with our overcharges of customers which are registered investment companies. In reaching this settlement, we neither admitted nor denied the claims contained in the SEC's order, and agreed to pay a civil monetary penalty of $40 million. Also in June 2019, we reached an agreement with the Massachusetts Attorney General's office to resolve its claims related to this matter. In reaching this settlement, we neither admitted nor denied the claims in the order, and agreed to pay a civil monetary penalty of $5.5 million. The SEC and Massachusetts Attorney General's office settlements both recognize that the payment of $48.8 million in disgorgement and interest is satisfied by our direct reimbursements of our customers. We paid fines to resolve claims of the Securities Divisions of the Secretaries of the State of Massachusetts and New Hampshire. The costs associated with the settlements discussed above were within our related previously established accruals for loss contingencies.

We have not resolved certain claims that may be made by the U.S. Department of Labor. We do not know whether any such claims will be brought, and there can be no assurance that any settlement of any such claims will be reached on financial terms acceptable to us or at all. The aggregate amount of penalties that may potentially be imposed upon us in connection with the resolution of any such matters is not currently known.

Gomes, et al. v. State Street Corp.

Eight participants in our Salary Savings Program filed a purported class action complaint in May 2021 on behalf of participants and beneficiaries who participated in the Program and invested in our proprietary investment fund options between May 2015 and the present. The complaint names the Plan Sponsor as well as the committees overseeing the Plan and their respective members as defendants, and alleges breach of fiduciary duty and violations of other duties owed to retirement plan participants under the Employee Retirement Income and Security Act. We and the other named defendants deny the alleged claims and are proceeding with a defense of the matter.

Edmar Financial Company, LLC et al v. Currenex, Inc. et al

In August 2021, two former Currenex clients filed a putative civil class action lawsuit in the Southern District of New York alleging antitrust violations, fraud and a civil Racketeer Influenced and Corrupt Organization Act violation against Currenex, State Street and others.

Income Taxes

In determining our provision for income taxes, we make certain judgments and interpretations with respect to tax laws in jurisdictions in which we have business operations. Because of the complex nature of these laws, in the normal course of our business, we are subject to challenges from U.S. and non-U.S. income tax authorities regarding the amount of income taxes due. These challenges may result in adjustments to the timing or amount of taxable income or deductions or the allocation of taxable income among tax jurisdictions. We recognize a tax benefit when it is more likely than not that our position will result in a tax deduction or credit. Unrecognized tax benefits of approximately $285 million as of December 31, 2022 increased from $252 million as of December 31, 2021.

We are presently under audit by a number of tax authorities. The earliest tax year open to examination in jurisdictions where we have material operations is 2013. Management believes that we have sufficiently accrued liabilities as of December 31, 2022 for potential tax exposures.

Note 14. Variable Interest Entities

We are involved, in the normal course of our business, with various types of special purpose entities, some of which meet the definition of VIEs. When evaluating a VIE for consolidation, we must determine whether or not we have a variable interest in the entity. Variable interests are investments or other interests that absorb portions of an entity's expected losses or receive portions of the entity's expected returns. If it is determined that we do not have a variable interest in the VIE, no further analysis is required and we do not consolidate the VIE. If we hold a variable interest in a VIE, we are required by U.S. GAAP to consolidate that VIE when we have a controlling financial interest in the VIE and therefore are deemed to be the primary beneficiary. We are determined to have a controlling financial interest in a VIE when it has both the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and the obligation to absorb losses or the right to receive benefits of the VIE that could potentially be significant to that VIE. This determination is evaluated periodically as facts and circumstances change.

Asset-Backed Investment Securities

We invest in various forms of ABS, which we carry in our investment securities portfolio. These ABS meet the U.S. GAAP definition of asset securitization entities, which are considered to be VIEs. We are not considered to be the primary beneficiary of these VIEs since we do not have control over their activities. Additional information about our ABS is provided in Note 3.

Tax-Exempt Investment Program

Prior to 2022, in the normal course of business, we structured and sold certificated interests in pools of tax-exempt investment grade assets, principally to our mutual fund clients. We structured these pools as partnership trusts, and the assets and liabilities of the trusts were recorded in our consolidated statement of condition as AFS investment securities and other short-term borrowings.

In November 2021, all certificated interests issued by the trust were repaid, and subsequently, no further certificated interests have been issued.

Under separate legal agreements, we provided liquidity facilities to these trusts and, with respect to certain securities, letters of credit. As of both December 31, 2022 and 2021, we had no commitments related to the trusts.

Interests in Investment Funds

In the normal course of business, we manage various types of investment funds through State Street Global Advisors in which our clients are investors, including State Street Global Advisors commingled investment vehicles and other similar investment structures. The majority of our AUM are contained within such funds. The services we provide to these funds generate management fee revenue. From time to time, we may invest cash in the funds in order for the funds to establish a performance history for newly-launched strategies, referred to as seed capital, or for other purposes.

With respect to our interests in funds that meet the definition of a VIE, a primary beneficiary assessment is performed to determine if we have a controlling financial interest. As part of our assessment, we consider all the facts and circumstances regarding the terms and characteristics of the variable interest(s), the design and characteristics of the fund and the other involvements of the enterprise with the fund. Upon consolidation of certain funds, we retain the specialized investment company accounting rules followed by the underlying funds.

All of the underlying investments held by such consolidated funds are carried at fair value, with corresponding changes in the investments' fair values reflected in foreign exchange trading services revenue in our consolidated statement of income. When we no longer control these funds due to a reduced ownership interest or other reasons, the funds are de-consolidated and accounted for under another accounting method if we continue to maintain investments in the funds.

As of both December 31, 2022 and 2021, we had no consolidated funds. As of December 31, 2022 and 2021, we managed certain funds, considered VIEs, in which we held a variable interest but for which we were not deemed to be the primary beneficiary. Our potential maximum loss exposure related to these unconsolidated funds totaled $15 million and $17 million as of December 31, 2022 and 2021, respectively, and represented the carrying value of our investments, which are recorded in other assets in our consolidated statement of condition. The amount of loss we may recognize during any period is limited to the carrying amount of our investments in the unconsolidated funds.

Our conclusion to consolidate a fund may vary from period to period, most commonly as a result of fluctuation in our ownership interest as a result of changes in the number of fund shares held by either us or by third parties. Given that the funds follow specialized investment company accounting rules which prescribe fair value, a de-consolidation generally would not result in gains or losses for us.

The net assets of any consolidated fund are solely available to settle the liabilities of the fund and to settle any investors' ownership redemption requests, including any seed capital invested in the fund by us. We are not contractually required to provide financial or any other support to any of our funds. In addition, neither creditors nor equity investors in the funds have any recourse to our general credit.

We also held investments in low-income housing, production and investment tax credit entities, considered VIEs for which we were not deemed to be the primary beneficiary. As of December 31, 2022 and 2021, our potential maximum loss exposure related to these unconsolidated entities totaled $1.60 billion and $1.69 billion, respectively, most of which represented the carrying value of our investments, which are recorded in other assets in our consolidated statement of condition.

Note 15. Shareholders' Equity

Preferred Stock

The following table summarizes selected terms of each of the series of the preferred stock issued and outstanding as of December 31, 2022:

Preferred Stock[1]:	Issuance Date	Depositary Shares Issued	Ownership Interest Per Depositary Share	Liquidation Preference Per Share	Liquidation Preference Per Depositary Share	Per Annum Dividend Rate	Dividend Payment Frequency	Carrying Value as of December 31, 2022 (In millions)	Redemption Date[2]
Series D[3]	February 2014	30,000,000	1/4,000th	100,000	25	5.9% to but excluding March 15, 2024, then a floating rate equal to the three-month LIBOR plus 3.108%	Quarterly	$ 742	March 15, 2024
Series F[4][5]	May 2015	250,000	1/100th	100,000	1,000	5.25% to but excluding September 15, 2020, then a floating rate equal to the three-month LIBOR plus 3.597%, or 8.366% effective December 15, 2022	Quarterly	247	September 15, 2020
Series G[6]	April 2016	20,000,000	1/4,000th	100,000	25	5.35% to but excluding March 15, 2026, then a floating rate equal to the three-month LIBOR plus 3.709%	Quarterly	493	March 15, 2026
Series H[7]	September 2018	500,000	1/100th	100,000	1,000	5.625% to but excluding December 15, 2023, then a floating rate equal to the three-month LIBOR plus 2.539%	Semi-annually	494	December 15, 2023

[1] The preferred stock and corresponding depositary shares may be redeemed at our option in whole, but not in part, prior to the redemption date upon the occurrence of a regulatory capital treatment event, as defined in the certificate of designation, at a redemption price equal to the liquidation price per share and liquidation price per depositary share plus any declared and unpaid dividends, without accumulation of any undeclared dividends.

[2] On the redemption date, or any dividend payment date thereafter, the preferred stock and corresponding depositary shares may be redeemed by us, in whole or in part, at the liquidation price per share and liquidation price per depositary share plus any declared and unpaid dividends, without accumulation of any undeclared dividends.

[3] The dividend rate for the floating rate period of the Series D preferred stock that begins on March 15, 2024 and all subsequent floating rate periods will transition to a new, fixed rate in accordance with the LIBOR Act and the contractual terms of the Series D preferred stock.

[4] Series F preferred stock is redeemable on September 15, 2020 and on each succeeding dividend payment date.

[5] In accordance with the LIBOR Act, the benchmark interest rate used to calculate the dividend rate of the Series F preferred stock issued and outstanding will transition from LIBOR to CME Term SOFR, plus 0.26161%, beginning with the September 15, 2023 dividend period.

[6] The dividend rate for the floating rate period of the Series G preferred stock that begins on March 15, 2026 and all subsequent floating rate periods will remain at the current fixed rate in accordance with the LIBOR Act and the contractual terms of the Series G preferred stock.

[7] In accordance with the LIBOR Act, the benchmark interest rate to be used to calculate the dividend rate during the floating rate period of the Series H preferred stock that begins on December 15, 2023 will transition from LIBOR to CME Term SOFR, plus 0.26161%.

On March 15, 2021, we redeemed an aggregate of $500 million, or 5,000 of the 7,500 outstanding shares of our non-cumulative perpetual preferred stock, Series F, for cash at a redemption price of $100,000 per share (equivalent to $1,000 per depositary share) plus all declared and unpaid dividends.

The following table presents the dividends declared for each of the series of preferred stock issued and outstanding for the periods indicated:

	Years Ended December 31,					
	2022			2021		
(Dollars in millions, except per share amounts)	Dividends Declared per Share	Dividends Declared per Depositary Share	Total	Dividends Declared per Share	Dividends Declared per Depositary Share	Total
Preferred Stock:						
Series D	$ 5,900	$ 1.48	$ 44	$ 5,900	$ 1.48	$ 44
Series F	5,208	52.08	13	3,808	38.08	15
Series G	5,352	1.32	27	5,352	1.32	27
Series H	5,625	56.25	28	5,625	56.25	28
Total			$ 112			$ 114

In February 2023, we declared dividends on our series D, F, and G preferred stock of approximately $1,475, $2,092, and $1,338, respectively, per share, or approximately $0.37, $20.92, and $0.33, respectively, per depositary share. These dividends total approximately $11 million, $5 million, and $7 million on our series D, F, and G preferred stock, respectively, which will be paid in March 2023.

Common Stock

In July 2021, our Board approved a share repurchase program authorizing the repurchase of up to $3.0 billion of our common stock through the end of 2022. We did not repurchase any common stock during the first three quarters of 2022. In October 2022, we resumed our share repurchases and purchased $1.5 billion of our common stock in the fourth quarter of 2022 under the 2021 Program. In January 2023, our Board approved a share repurchase program authorizing the purchase of up to $4.5 billion of our common stock through December 31, 2023.

The table below presents the activity under our common share repurchase program for the period indicated:

	Years Ended December 31,		
	2022		
	Shares Acquired (In millions)	Average Cost per Share	Total Acquired (In millions)
2021 Program	19.5	$ 76.81	$ 1,500

The table below presents the dividends declared on common stock for the periods indicated:

	Years Ended December 31,			
	2022		2021	
	Dividends Declared per Share	Total (In millions)	Dividends Declared per Share	Total (In millions)
Common Stock	$ 2.40	$ 871	$ 2.18	$ 779

Accumulated Other Comprehensive Income (Loss)

The following table presents the after-tax components of AOCI and changes for the periods indicated, net of related taxes:

(In millions)	Net Unrealized Gains (Losses) on Cash Flow Hedges	Net Unrealized Gains (Losses) on Investment Securities[1]	Net Unrealized Losses on Retirement Plans	Foreign Currency Translation	Net Unrealized Gains (Losses) on Hedges of Net Investments in Non-U.S. Subsidiaries	Total
Balance as of December 31, 2019	$ (70)	$ 407	$ (187)	$ (1,072)	$ 46	$ (876)
Other comprehensive income (loss) before reclassifications	179	439	—	738	(250)	1,106
Increase (decrease) due to amounts reclassified from accumulated other comprehensive income	(52)	—	9	—	—	(43)
Other comprehensive income (loss)	127	439	9	738	(250)	1,063
Balance as of December 31, 2020	$ 57	$ 846	$ (178)	$ (334)	$ (204)	$ 187
Other comprehensive income (loss) before reclassifications	11	(854)	1	(685)	272	(1,255)
Increase (decrease) due to amounts reclassified from accumulated other comprehensive income	(70)	(42)	47	—	—	(65)
Other comprehensive income (loss)	(59)	(896)	48	(685)	272	(1,320)
Balance as of December 31, 2021	$ (2)	$ (50)	$ (130)	$ (1,019)	$ 68	$ (1,133)
Other comprehensive income (loss) before reclassifications	**(321)**	**(1,937)**	**(1)**	**(732)**	**291**	**(2,700)**
Increase (decrease) due to amounts reclassified from accumulated other comprehensive income	**(36)**	**170**	**(12)**	**—**	**—**	**122**
Other comprehensive income (loss)	**(357)**	**(1,767)**	**(13)**	**(732)**	**291**	**(2,578)**
Balance as of December 31, 2022	**$ (359)**	**$ (1,817)**	**$ (143)**	**$ (1,751)**	**$ 359**	**$ (3,711)**

[1] Includes after-tax net unamortized unrealized gains (losses) related to AFS investment securities that have been transferred to HTM of ($749) million, $31 million and $55 million as of December 31, 2022, 2021 and 2020, respectively.

The following table presents after-tax reclassifications into earnings for the periods indicated:

	Years Ended December 31,			
	2022	2021	2020	
(In millions)	Amounts Reclassified into Earnings			Affected Line Item in Consolidated Statement of Income
Investment securities:				
Net realized (gains) losses from sales of available-for-sale securities, net of related taxes of $1, ($15) and $0 respectively	**$ 1**	$ (42)	$ —	Net gains (losses) from sales of available-for-sale securities
Losses reclassified from accumulated other comprehensive income into income, net of related taxes of $96 in 2022	**169**	—	—	Net interest income
Cash flow hedges:				
(Gains) losses reclassified from accumulated other comprehensive income into income, net of related taxes of ($13), ($25) and ($20) respectively	**(36)**	(70)	(52)	Net interest income
Retirement plans:				
Amortization of actuarial losses, net of related taxes of $($1), $16 and $3 respectively	**(12)**	47	9	Compensation and employee benefits expenses
Total amounts reclassified from accumulated other comprehensive income	**$ 122**	$ (65)	$ (43)	

Note 16. Regulatory Capital

We are subject to various regulatory capital requirements administered by federal banking agencies. Failure to meet minimum regulatory capital requirements can initiate certain mandatory and discretionary actions by regulators that, if undertaken, could have a direct material effect on our consolidated financial condition. Under current regulatory capital adequacy guidelines, we must meet specified capital requirements that involve quantitative measures of our consolidated assets, liabilities and off-balance sheet exposures calculated in conformity with regulatory accounting practices. Our capital components and their classifications are subject to qualitative judgments by regulators about components, risk weightings and other factors.

As required by the Dodd-Frank Act, we and State Street Bank, as advanced approaches banking organizations, are subject to a "capital floor" in the calculation and assessment of regulatory capital adequacy by U.S. banking regulators. Beginning on January 1, 2015, we were required to calculate our risk- based capital ratios using both the advanced approaches and the standardized approach. As a result, from January 1, 2015 going forward, our risk-based capital ratios for regulatory assessment purposes are the lower of each ratio calculated under the standardized approach and the advanced approaches.

As of December 31, 2022, we and State Street Bank exceeded all regulatory capital adequacy requirements to which we were subject. As of December 31, 2022, State Street Bank was categorized as “well capitalized” under the applicable regulatory capital adequacy framework, and exceeded all “well capitalized” ratio guidelines to which it was subject. Management believes that no conditions or events have occurred since December 31, 2022 that have changed the capital categorization of State Street Bank.

The following table presents the regulatory capital structure, total RWA, related regulatory capital ratios and the minimum required regulatory capital ratios for us and State Street Bank as of the dates indicated.

	State Street Corporation				State Street Bank			
(Dollars in millions)	Basel III Advanced Approaches December 31, 2022	Basel III Standardized Approach December 31, 2022	Basel III Advanced Approaches December 31, 2021	Basel III Standardized Approach December 31, 2021	Basel III Advanced Approaches December 31, 2022	Basel III Standardized Approach December 31, 2022	Basel III Advanced Approaches December 31, 2021	Basel III Standardized Approach December 31, 2021
Common shareholders' equity:								
Common stock and related surplus	**$ 11,234**	**$ 11,234**	$ 11,291	$ 11,291	**$ 13,033**	**$ 13,033**	$ 13,047	$ 13,047
Retained earnings	**27,028**	**27,028**	25,238	25,238	**16,975**	**16,975**	15,700	15,700
Accumulated other comprehensive income (loss)	**(3,711)**	**(3,711)**	(1,133)	(1,133)	**(3,428)**	**(3,428)**	(926)	(926)
Treasury stock, at cost	**(11,336)**	**(11,336)**	(10,009)	(10,009)	**—**	**—**	—	—
Total	**23,215**	**23,215**	25,387	25,387	**26,580**	**26,580**	27,821	27,821
Regulatory capital adjustments:								
Goodwill and other intangible assets, net of associated deferred tax liabilities	**(8,545)**	**(8,545)**	(8,935)	(8,935)	**(8,288)**	**(8,288)**	(8,667)	(8,667)
Other adjustments[1]	**(123)**	**(123)**	(505)	(505)	**(19)**	**(19)**	(309)	(309)
Common equity tier 1 capital	**14,547**	**14,547**	15,947	15,947	**18,273**	**18,273**	18,845	18,845
Preferred stock	**1,976**	**1,976**	1,976	1,976	**—**	**—**	—	—
Tier 1 capital	**16,523**	**16,523**	17,923	17,923	**18,273**	**18,273**	18,845	18,845
Qualifying subordinated long-term debt	**1,376**	**1,376**	1,588	1,588	**542**	**542**	752	752
Allowance for credit losses	**—**	**120**	—	108	**—**	**120**	—	108
Total capital	**$ 17,899**	**$ 18,019**	$ 19,511	$ 19,619	**$ 18,815**	**$ 18,935**	$ 19,597	$ 19,705
Risk-weighted assets:								
Credit risk[2]	**$ 61,108**	**$ 105,739**	$ 63,735	$ 109,554	**$ 54,675**	**$ 104,184**	$ 57,405	$ 106,405
Operational risk[3]	**42,763**	**NA**	45,550	NA	**42,325**	**NA**	42,813	NA
Market risk	**1,488**	**1,488**	2,113	2,113	**1,488**	**1,488**	2,113	2,113
Total risk-weighted assets	**$ 105,359**	**$ 107,227**	$ 111,398	$ 111,667	**$ 98,488**	**$ 105,672**	$ 102,331	$ 108,518
Adjusted quarterly average assets	**$ 275,678**	**$ 275,678**	$ 293,567	$ 293,567	**$ 273,220**	**$ 273,220**	$ 290,403	$ 290,403

Capital Ratios:	2022 Minimum Requirements[4]	2021 Minimum Requirements[4]								
Common equity tier 1 capital	**8.0 %**	8.0 %	**13.8 %**	**13.6 %**	14.3 %	14.3 %	**18.6 %**	**17.3 %**	18.4 %	17.4 %
Tier 1 capital	**9.5**	9.5	**15.7**	**15.4**	16.1	16.1	**18.6**	**17.3**	18.4	17.4
Total capital	**11.5**	11.5	**17.0**	**16.8**	17.5	17.6	**19.1**	**17.9**	19.2	18.2
Tier 1 leverage[5]	**4.0**	4.0	**6.0**	**6.0**	6.1	6.1	**6.7**	**6.7**	6.5	6.5

(1) Other adjustments within CET1 capital include accumulated other comprehensive income (loss) on cash flow hedges that are not recognized at fair value on the balance sheet, the overfunded portion of our defined benefit pension plan obligation net of associated deferred tax liabilities, disallowed deferred tax assets, and other required credit risk-based deductions.

(2) Under the advanced approaches, credit risk RWA includes a CVA which reflects the risk of potential fair value adjustments for credit risk reflected in our valuation of over-the-counter (OTC) derivative contracts. We used a simple CVA approach in conformity with the Basel III advanced approaches.

(3) Under the current advanced approaches rules and regulatory guidance concerning operational risk models, RWA attributable to operational risk can vary substantially from period-to-period, without direct correlation to the effects of a particular loss event on our results of operations and financial condition and impacting dates and periods that may differ from the dates and periods as of and during which the loss event is reflected in our financial statements, with the timing and categorization dependent on the processes for model updates and, if applicable, model revalidation and regulatory review and related supervisory processes. An individual loss event can have a significant effect on the output of our operational RWA under the advanced approaches depending on the severity of the loss event and its categorization among the seven Basel-defined UOMs.

(4) Minimum requirements include a CCB of 2.5% and a SCB of 2.5% for the advanced approaches and the standardized approach, respectively, a G-SIB surcharge of 1.0% and a countercyclical buffer of 0%.

(5) State Street Bank is required to maintain a minimum Tier 1 leverage ratio of 5% as it is the insured depository institution subsidiary of State Street Corporation, a U.S. G-SIB.

NA Not applicable

Note 17. Net Interest Income

The following table presents the components of interest income and interest expense, and related NII, for the periods indicated:

	Years Ended December 31,		
(In millions)	2022	2021	2020
Interest income:			
Interest-bearing deposits with banks	$ 842	$ (15)	$ 76
Investment securities:			
Investment securities available-for-sale	724	572	748
Investment securities held-to-maturity	979	665	829
Investment securities purchased under money market liquidity facility	—	4	117
Total Investment securities	1,703	1,241	1,694
Securities purchased under resale agreements	188	27	126
Loans	972	638	624
Other interest-earning assets	383	17	55
Total interest income	4,088	1,908	2,575
Interest expense:			
Interest-bearing deposits	967	(263)	(117)
Short term borrowings under money market liquidity facility	—	4	101
Securities sold under repurchase agreements	14	—	4
Other short-term borrowings	26	2	17
Long-term debt	376	219	312
Other interest-bearing liabilities	161	41	58
Total interest expense	1,544	3	375
Net interest income	$ 2,544	$ 1,905	$ 2,200

Note 18. Equity-Based Compensation

We record compensation expense for equity-based awards, such as deferred stock and performance awards, based on the closing price of our common stock on the date of grant, adjusted if appropriate, based on the eligibility of the award to receive dividends.

Compensation expense related to equity-based and cash settled stock awards with service-only conditions and terms that provide for a graded vesting schedule is recognized on a straight-line basis over the required service period for the entire award. Compensation expense related to equity-based awards with performance conditions and terms that provide for a graded vesting schedule is recognized over the requisite service period for each separately vesting tranche of the award, and is based on the probable outcome of the performance conditions at each reporting date. Compensation expense is adjusted for assumptions with respect to the estimated amount of awards that will be forfeited prior to vesting, and for employees who have met certain retirement eligibility criteria. Compensation expense for common stock awards granted to employees meeting early retirement eligibility criteria is fully expensed on the grant date.

Dividend equivalents for certain equity-based awards are paid on stock units on a current basis prior to vesting and distribution.

The 2017 Stock Incentive Plan, or 2017 Plan, was approved by shareholders in May 2017 for issuance of stock and stock based awards. Awards may be made under the 2017 Plan for (i) up to 8.3 million shares of common stock plus (ii) up to an additional 28.5 million shares that were available to be issued under the 2006 Equity Incentive Plan, or 2006 Plan, or may become available for issuance under the 2006 Plan due to expiration, termination, cancellation, forfeiture or repurchase of awards granted under the 2006 Plan. As of December 31, 2022, a total of 20.8 million shares from the 2006 Plan have been added to and may be issued from the 2017 Plan. As of December 31, 2022, a cumulative total of 18.7 million shares have been awarded under the 2017 Plan, compared to cumulative totals of 15.2 million shares and 11.3 million shares as of December 31, 2021 and 2020, respectively.

The 2017 Plan allows for shares withheld in payment of the exercise price of an award or in satisfaction of tax withholding requirements, shares forfeited due to employee termination, shares expired under option awards, or shares not delivered when performance conditions have not been met, to be added back to the pool of shares available for issuance under the 2017 Plan. From inception to December 31, 2022, 4.5 million shares had been awarded under the 2017 Plan but not delivered, and have become available for re-issue. As of December 31, 2022, a total of 14.9 million shares were available for future issuance under the 2017 Plan.

For deferred stock awards granted under the Plans, no common stock is issued at the time of grant and the award does not possess dividend and voting rights. Generally, these grants vest over one to four years. Performance awards granted are earned over a performance period based on the achievement of defined goals, generally over three years. Payment for performance awards is made in shares of our common stock equal to its fair market value per share, based on the performance of certain financial ratios, after the conclusion of each performance period.

Beginning with 2012, malus-based forfeiture provisions were included in deferred stock awards granted to employees identified as “material risk-takers,” as defined by management. These malus-based forfeiture provisions provide for the reduction

or cancellation of unvested deferred compensation, such as deferred stock awards and performance based awards, if it is determined that a material risk-taker made risk-based decisions that exposed us to inappropriate risks that resulted in a material unexpected loss at the business-unit, line-of-business or corporate level. In addition, awards granted to certain of our senior executives, as well as awards granted to individuals in certain jurisdictions, may be subject to recoupment after vesting (if applicable) and delivery to the individual in specified circumstances generally relating to fraud or willful misconduct by the individual that results in material harm to us or a material financial restatement.

Compensation expense related to deferred stock awards and performance awards, which we record as a component of compensation and employee benefits expense in our consolidated statement of income, was $240 million, $259 million and $240 million for the years ended December 31, 2022, 2021 and 2020, respectively. Such expense for 2022, 2021 and 2020 excluded an expense of $21 million, a release of $5 million and an expense of $29 million, respectively, associated with acceleration of expense in connection with targeted staff reductions. This expense was included in the severance-related portion of the associated restructuring or repositioning charges recorded in each respective year.

For the years ended December 31, 2022, 2021 and 2020, no stock appreciation rights were exercised. As of December 31, 2022, there was no unrecognized compensation cost related to stock appreciation rights.

	Shares (In thousands)	Weighted-Average Grant Date Fair Value
Deferred Stock Awards:		
Outstanding as of December 31, 2020	5,686	$ 69.70
Granted	3,136	69.48
Vested	(2,801)	73.70
Forfeited	(244)	68.77
Outstanding as of December 31, 2021	5,777	67.55
Granted	**2,841**	**81.37**
Vested	**(3,035)**	**71.46**
Forfeited	**(304)**	**70.96**
Outstanding as of December 31, 2022	**5,279**	**72.43**

The total fair value of deferred stock awards vested for the years ended December 31, 2022, 2021 and 2020, based on the weighted average grant date fair value in each respective year, was $217 million, $206 million and $210 million, respectively. As of December 31, 2022, total unrecognized compensation cost related to deferred stock awards, net of estimated forfeitures, was $203 million, which is expected to be recognized over a weighted-average period of 2.5 years.

	Shares (In thousands)	Weighted-Average Grant Date Fair Value
Performance Awards:		
Outstanding as of December 31, 2020	2,517	$ 68.42
Granted	802	61.87
Forfeited	(14)	57.66
Paid out	(716)	78.94
Outstanding as of December 31, 2021	2,589	63.54
Granted	**684**	**81.86**
Forfeited	**(23)**	**72.91**
Paid out	**(954)**	**62.49**
Outstanding as of December 31, 2022	**2,296**	**69.43**

The total fair value of performance awards vested for the years ended December 31, 2022, 2021 and 2020, based on the weighted average grant date fair value in each respective year, was $60 million, $57 million and $30 million, respectively. As of December 31, 2022, total unrecognized compensation cost related to performance awards, net of estimated forfeitures, was $24 million, which is expected to be recognized over a weighted-average period of 1.8 years.

	Shares (In thousands)	Weighted-Average Grant Date Fair Value
Cash Settled Restricted Stock Awards:		
Outstanding as of December 31, 2020	—	$ —
Granted	46	69.95
Forfeited	—	—
Paid out	(23)	69.95
Outstanding as of December 31, 2021	23	69.95
Granted	**45**	**85.71**
Forfeited	**—**	**—**
Paid out	**(33)**	**80.77**
Outstanding as of December 31, 2022	**35**	**79.99**

The total fair value of cash settled restricted stock awards vested during the year ended December 31, 2022 and 2021, based on the weighted average grant date fair value, was $3 million and $2 million, respectively. As of December 31, 2021, there was no unrecognized compensation cost related to cash settled restricted stock awards.

We utilize either treasury shares or authorized but unissued shares to satisfy the issuance of common stock under our equity incentive plans. We do not have a specific policy concerning purchases of our common stock to satisfy stock issuances. We have a general policy concerning purchases of our common stock to meet issuances under our employee benefit plans, including other corporate purposes. Various factors determine the amount and timing of our purchases of our common stock, including regulatory reviews and approvals or non-objections, our regulatory capital requirements, the number of shares we expect to issue under employee benefit plans, market conditions (including the trading price of our common stock), and legal considerations. These factors can change at any time, and the number of shares of common stock we will purchase or when we will purchase them cannot be assured. Additional information on our common stock purchase program is provided in Note 15.

Note 19. Employee Benefits

Defined Benefit Pension and Other Post-Retirement Benefit Plans

State Street Bank and certain of its U.S. subsidiaries participate in a non-contributory, tax-qualified defined benefit pension plan. The U.S. defined benefit pension plan was frozen as of December 31, 2007 and no new employees were eligible to participate after that date. We have agreed to contribute sufficient amounts as necessary to meet the benefits paid to plan participants and to fund the plan's service cost, plus interest. U.S. employee account balances earn annual interest credits until the employee begins receiving benefits. Non-U.S. employees participate in local defined benefit plans which are funded as required in each local jurisdiction. In addition to the defined benefit pension plans, we have non-qualified unfunded SERPs that provide certain officers with defined pension benefits in excess of allowable qualified plan limits. State Street Bank and certain of its U.S. subsidiaries also participate in a post-retirement plan that provides health care benefits for certain retired employees. The total expense for these tax-qualified and non-qualified plans was $21 million, $27 million and $25 million in 2022, 2021 and 2020, respectively.

We recognize the funded status of our defined benefit pension plans and other post-retirement benefit plans, measured as the difference between the fair value of the plan assets and the projected benefit obligation, in the consolidated statement of position. The assets held by the defined benefit pension plans are largely made up of common, collective funds that are liquid and invest principally in U.S. equities and high-quality fixed-income investments. The majority of these assets fall within Level 2 of the fair value hierarchy. The benefit obligations associated with our primary U.S. and non-U.S. defined benefit plans, non-qualified unfunded supplemental retirement plans and post-retirement plans were $1.08 billion, $33 million and $1 million, respectively, as of December 31, 2022 and $1.47 billion, $42 million and $3 million, respectively, as of December 31, 2021. As the primary defined benefit plans are frozen, the benefit obligation will only vary over time as a result of changes in market interest rates, the life expectancy of the plan participants and payments made from the plans. The primary U.S. and non-U.S. defined benefit pension plans were overfunded by $28 million and $49 million as of December 31, 2022 and 2021, respectively. The non-qualified supplemental retirement plans were underfunded by $33 million and $42 million as of December 31, 2022 and 2021, respectively. The other post-retirement benefit plans were underfunded by $1 million and $3 million as of December 31, 2022 and 2021, respectively. The underfunded status is included in other liabilities.

Defined Contribution Retirement Plans

We contribute to employer-sponsored U.S. and non-U.S. defined contribution plans. Our contribution to these plans was $171 million, $171 million and $168 million in 2022, 2021 and 2020, respectively.

Note 20. Occupancy Expense and Information Systems and Communications Expense

Occupancy expense and information systems and communications expense include depreciation of buildings, leasehold improvements, computer hardware and software, equipment, furniture and fixtures, and amortization of lease right-of-use assets. Total depreciation and amortization expense in 2022, 2021 and 2020 was $842 million, $859 million and $858 million, respectively.

In the fourth quarter of 2022 we completed a sale leaseback transaction of two owned properties in the United States of America. Under the transaction, land, buildings and building improvements were sold for net proceeds of $27 million. We recognized a gain of $11 million on the sale which is presented within Occupancy expense. The initial term of the subsequent leases is 3 years and they are recognized as operating leases.

We use our incremental borrowing rate to determine the present value of the lease payments for finance and operating leases described below. Additionally, we do not separate nonlease components such as real estate taxes and common area maintenance from base lease payments.

As of December 31, 2022, we had finance leases for information technology equipment of $167 million recorded in premises and equipment, with the related liability of $176 million recorded in long-term debt, in our consolidated statement of condition. As of December 31, 2021, we had finance leases related to our One Lincoln Street Boston headquarters and information technology equipment of an aggregate net book value of $135 million recorded in premises and equipment, and the related liability of $164 million recorded in long-term debt, in our consolidated statement of condition. In December 2022, modifications were made to our One Lincoln Street Boston lease preparing for its expiration in 2023, resulting in reclassification from a finance lease to an operating lease.

Finance lease right-of-use asset amortization is recorded in occupancy expense on a straight-line basis in our consolidated statement of income over the respective lease term. As of December 31, 2022, accumulated amortization of the finance lease right-of-use asset was $40 million. Lease payments are recorded as a reduction of the liability, with a portion recorded as imputed interest expense. In 2022 and 2021, interest expense related to the finance lease obligation reflected in NII was $6 million and $6 million, respectively.

As of December 31, 2022, an aggregate net book value of $500 million for the operating lease right-of-use assets is recorded in other assets, with the related lease liability of $630 million recorded in accrued expenses and other liabilities in our consolidated statement of condition.

We have entered into non-cancellable operating leases for premises and equipment. Nearly all of these leases include renewal options, and only those reasonably certain of being exercised are included in the term of the lease. Costs for operating leases are recorded on a straight-line basis which includes both interest expense and right-of-use asset amortization. Operating lease costs for office space are recorded in occupancy expense. Costs related to operating leases for equipment are recorded in information systems and communications expense.

As of December 31, 2022, we have an additional operating lease, primarily for office space, that has not yet commenced with approximately $455 million of undiscounted future minimum lease payments. This lease will commence in fiscal year 2023 with 15 year lease term. These future payments relate to the new Boston headquarters lease executed in the first quarter of 2019, replacing the One Lincoln Street Boston property.

None of our leases contain residual value guarantees.

The following table presents lease costs, sublease rental income, cash flows and new leases arising from lease transactions for 2022:

	Years Ended December 31,	
(In millions)	**2022**	**2021**
Finance lease:		
Amortization of right-of-use assets	**$ 50**	$ 27
Interest on lease liabilities	**6**	6
Total finance lease expense	**56**	33
Sublease income	**(10)**	(11)
Net finance lease expense	**46**	22
Operating lease:		
Operating lease expense	**130**	147
Sublease income	**(16)**	(18)
Net operating lease expense	**114**	129
Net lease expense	**$ 160**	$ 151
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from finance leases	**$ 6**	$ 6
Operating cash flows from operating leases	**161**	198
Financing cash flows from finance leases	**58**	47
Right-of-use assets obtained in exchange for new lease obligations:		
Operating leases	**$ 88**	$ 69
Finance leases	**99**	108

The following table presents future minimum lease payments under non-cancellable leases as of December 31, 2022:

(In millions)	Operating Leases	Finance Leases	Total
2023	$ 189	$ 50	$ 239
2024	125	52	177
2025	107	52	159
2026	84	31	115
2027	70	—	70
Thereafter	101	—	101
Total future minimum lease payments	676	185	861
Less imputed interest	(46)	(9)	(55)
Total	$ 630	$ 176	$ 806

The following table presents details related to remaining lease terms and discount rate as of December 31, 2022 and 2021:

	December 31, 2022	December 31, 2021
Weighted-average remaining lease term (in years):		
Finance leases	3.5	2.6
Operating leases	5.0	5.8
Weighted-average discount rate:		
Finance leases	3 %	4 %
Operating leases	3 %	3 %

Note 21. Expenses

The following table presents the components of other expenses for the periods indicated:

	Years Ended December 31,		
(In millions)	2022	2021	2020
Professional services	$ 375	$ 334	$ 364
Sales advertising and public relations	99	73	77
Regulatory fees and assessments	83	69	61
Securities processing	63	34	41
Bank operations	41	12	18
Donations	27	2	20
Other	387	372	384
Total other expenses	$ 1,075	$ 896	$ 965

Acquisition and Restructuring Costs

We recorded approximately $65 million and $13 million, in 2022 and 2021, respectively, of acquisition costs related to the BBH Investor Services acquisition transaction we are no longer pursuing. In addition, in 2021, we also recorded approximately $52 million of acquisition costs related to our 2018 acquisition of CRD for which starting in 2022, we no longer distinguished certain costs as acquisition costs.

Repositioning Charges

In 2022, we recorded repositioning charges of $78 million, consisting of $50 million of compensation and benefits expenses primarily related to streamlining the Investment Services organization, $20 million of occupancy charges related to real estate footprint optimization and $8 million of BBH-related repositioning charges. The BBH-related repositioning charges were recognized in acquisition and restructuring expenses.

In 2021, we recorded a net repositioning benefit of $3 million, including $32 million release of previously accrued severance charges, primarily due to higher attrition and redeployment rates during the COVID-19 pandemic, partially offset by $29 million of occupancy charges related to footprint optimization.

The following table presents aggregate activity for repositioning charges and activity related to previous Beacon restructuring charges for the periods indicated:

(In millions)	Employee Related Costs	Real Estate Actions	Asset and Other Write-offs	Total
Accrual Balance at December 31, 2019	$ 190	$ 7	$ 1	$ 198
Accruals for Beacon	(4)	—	—	(4)
Accruals for Repositioning Charges	82	51	—	133
Payments and Other Adjustments	(78)	(52)	(1)	(131)
Accrual Balance at December 31, 2020	190	6	—	196
Accruals for Beacon	(1)	—	—	(1)
Accruals for Repositioning Charges	(32)	29	—	(3)
Payments and Other Adjustments	(89)	(29)	—	(118)
Accrual Balance at December 31, 2021	68	6	—	74
Accruals for Repositioning Charges	58	20	—	78
Payments and Other Adjustments	(43)	(21)	—	(64)
Accrual Balance at December 31, 2022	$ 83	$ 5	$ —	$ 88

Note 22. Income Taxes

We use an asset-and-liability approach to account for income taxes. Our objective is to recognize the amount of taxes payable or refundable for the current year through charges or credits to the current tax provision, and to recognize deferred tax assets and liabilities for future tax consequences of temporary differences between amounts reported in our consolidated financial statements and their respective tax bases. The measurement of tax assets and liabilities is based on enacted tax laws and applicable tax rates. The effects of a tax position on our consolidated financial statements are recognized when we believe it is more likely than not that the

position will be sustained. A valuation allowance is established if it is considered more likely than not that all or a portion of the deferred tax assets will not be realized. Deferred tax assets and liabilities recorded in our consolidated statement of condition are netted within the same tax jurisdiction.

The following table presents the components of income tax expense (benefit) for the periods indicated:

	Years Ended December 31,		
(In millions)	**2022**	**2021**	**2020**
Current:			
Federal	**$ 161**	$ 172	$ 241
State	**112**	142	122
Non-U.S.	**342**	326	310
Total current expense	**615**	640	673
Deferred:			
Federal	**(16)**	(98)	(168)
State	**(2)**	(61)	5
Non-U.S.	**(44)**	(3)	(31)
Total deferred expense (benefit)	**(62)**	(162)	(194)
Total income tax expense (benefit)	**$ 553**	$ 478	$ 479

The following table presents a reconciliation of the U.S. statutory income tax rate to our effective tax rate based on income before income tax expense for the periods indicated:

	Years Ended December 31,		
	2022	**2021**	**2020**
U.S. federal income tax rate	**21.0 %**	21.0 %	21.0 %
Changes from statutory rate:			
State taxes, net of federal benefit	**3.1**	2.2	3.8
Tax-exempt income	**(1.0)**	(1.1)	(1.3)
Business tax credits[1]	**(4.0)**	(4.1)	(5.1)
Foreign tax differential	**—**	0.1	(0.8)
Foreign tax credit (benefits)/ limitations[2]	**(0.1)**	(1.9)	(0.9)
Change in Valuation Allowance	**(2.0)**	—	—
Other, net	**(0.4)**	(1.1)	(0.2)
Effective tax rate	**16.6 %**	15.1 %	16.5 %

[1] Business tax credits include low-income housing, production and investment tax credits.

[2] Foreign tax credit (benefits)/limitations includes the period expense for global intangible low-taxed income (GILTI).

Undistributed indefinitely reinvested earnings of certain foreign subsidiaries amounted to approximately $6.6 billion at December 31, 2022. As a result, no provision has been recorded for state and local or foreign withholding income taxes. If a distribution were to occur, we would be subject to state, local and to foreign withholding tax. It is expected that any distribution will be exempt from federal income tax. Although the foreign withholding tax is generally creditable against U.S. federal income tax, certain credit utilization limitations may result in a net cost.

The following table presents significant components of our gross deferred tax assets and gross deferred tax liabilities as of the dates indicated:

	December 31,	
(In millions)	**2022**	**2021**
Deferred tax assets:		
Other amortizable assets	**$ 267**	$ 323
Tax credit carryforwards	**530**	526
Lease obligations	**198**	217
Deferred compensation	**127**	158
Restructuring charges and other reserves	**118**	88
NOL and other carryforwards	**152**	118
Pension plan	**18**	28
Foreign currency translation	**74**	16
Unrealized losses on investment securities, net	**750**	17
Total deferred tax assets	**2,234**	1,491
Valuation allowance for deferred tax assets	**(160)**	(250)
Deferred tax assets, net of valuation allowance	**$ 2,074**	$ 1,241
Deferred tax liabilities:		
Fixed and intangible assets	**$ 597**	$ 601
Investment basis differences	**188**	200
Right-of-use Assets	**163**	172
Other	**21**	58
Total deferred tax liabilities	**$ 969**	$ 1,031

The table below summarizes the deferred tax assets and related valuation allowances recognized as of December 31, 2022:

(In millions)	**Deferred Tax Asset**	**Valuation Allowance**	**Expiration**
Other amortizable assets	**$ 267**	**$ (93)**	**None**
Tax credits	**530**	**—**	**2033-2042**
NOLs - Non-U.S.	**127**	**(48)**	**2026-2042, None**
NOLs - U.S.	**22**	**(16)**	**2023-2041, None**
Other carryforwards	**3**	**(3)**	**None**

Management considers the valuation allowance adequate to reduce the total deferred tax assets to an aggregate amount that will more likely than not be realized. Management has determined that a valuation allowance is not required for the remaining deferred tax assets because it is more likely than not that there will be sufficient taxable income of the appropriate nature within the carryforward periods to realize these assets.

At December 31, 2022, 2021 and 2020, the gross unrecognized tax benefits, excluding interest, were $285 million, $252 million and $308 million, respectively. Of this, the amounts that would reduce the effective tax rate, if recognized, are $272 million, $243 million and $294 million, respectively. The reduction in the effective tax rate includes the federal benefit for unrecognized state tax benefits.

The following table presents activity related to unrecognized tax benefits as of the dates indicated:

	December 31,		
(In millions)	2022	2021	2020
Beginning balance	$ 252	$ 308	$ 149
Decrease related to agreements with tax authorities	(4)	(130)	—
Increase related to tax positions taken during current year	48	50	47
Increase related to tax positions taken during prior years	8	42	137
Decreases related to a lapse of the applicable statute of limitations	(19)	(18)	(25)
Ending balance	$ 285	$ 252	$ 308

It is reasonably possible that of the $285 million of unrecognized tax benefits as of December 31, 2022, up to $63 million could decrease within the next 12 months due to agreements with tax authorities and the expiration of statutes of limitations. Management believes that we have sufficient accrued liabilities as of December 31, 2022 for tax exposures and related interest expense.

Income tax expense included related interest and penalties of approximately $8 million, $6 million and $6 million in 2022, 2021 and 2020, respectively. Total accrued interest and penalties were approximately $15 million, $9 million and $14 million as of December 31, 2022, 2021 and 2020, respectively.

Note 23. Earnings Per Common Share

Basic EPS is calculated pursuant to the two-class method, by dividing net income available to common shareholders by the weighted-average common shares outstanding during the period. Diluted EPS is calculated pursuant to the two-class method, by dividing net income available to common shareholders by the total weighted-average number of common shares outstanding for the period plus the shares representing the dilutive effect of equity-based awards. The effect of equity-based awards is excluded from the calculation of diluted EPS in periods in which their effect would be anti-dilutive.

The two-class method requires the allocation of undistributed net income between common and participating shareholders. Net income available to common shareholders, presented separately in our consolidated statement of income, is the basis for the calculation of both basic and diluted EPS. Participating securities are composed of unvested and fully vested SERP shares and fully vested deferred director stock awards, which are equity-based awards that contain non-forfeitable rights to dividends, and are considered to participate with the common stock in undistributed earnings.

The following table presents the computation of basic and diluted earnings per common share for the periods indicated:

	Years Ended December 31,		
(Dollars in millions, except per share amounts)	2022	2021	2020
Net income	$ 2,774	$ 2,693	$ 2,420
Less:			
Preferred stock dividends	(112)	(119)	(162)
Dividends and undistributed earnings allocated to participating securities[1]	(2)	(2)	(1)
Net income available to common shareholders	$ 2,660	$ 2,572	$ 2,257
Average common shares outstanding (In thousands):			
Basic average common shares	365,214	352,565	352,865
Effect of dilutive securities: equity-based awards	4,895	5,397	4,241
Diluted average common shares	370,109	357,962	357,106
Anti-dilutive securities[2]	866	3	1,066
Earnings per common share:			
Basic	$ 7.28	$ 7.30	$ 6.40
Diluted[3]	7.19	7.19	6.32

[1] Represents the portion of net income available to common equity allocated to participating securities, composed of unvested and fully vested SERP (Supplemental executive retirement plans) shares and fully vested deferred director stock awards, which are equity-based awards that contain non-forfeitable rights to dividends, and are considered to participate with the common stock in undistributed earnings.

[2] Represents equity-based awards outstanding but not included in the computation of diluted average common shares, because their effect was anti-dilutive. Additional information about equity-based awards is provided in Note 18.

[3] Calculations reflect allocation of earnings to participating securities using the two-class method, as this computation is more dilutive than the treasury stock method.

Note 24. Line of Business Information

Our operations are organized into two lines of business: Investment Servicing and Investment Management, which are defined based on products and services provided. The results of operations for these lines of business are not necessarily comparable with those of other companies, including companies in the financial services industry.

Investment Servicing, through State Street Investment Services, State Street Global Markets℠, State Street Alpha, and State Street Digital, we provide investment services for institutional clients, including mutual funds, collective investment funds and other investment pools, corporate and public retirement plans, insurance companies, investment managers, foundations and endowments worldwide. Products include: back office products such as custody, accounting, regulatory reporting, investor services, performance and analytics; middle office products such as IBOR, transaction management, loans, cash, derivatives and collateral services, record keeping, client reporting and investment analytics; foreign exchange, brokerage and other trading services; securities finance and enhanced custody products; deposit and short-term investment

facilities; loans and lease financing; investment manager and alternative investment manager operations outsourcing; performance, risk and compliance analytics; and financial data management to support institutional investors.

Included within our Investment Servicing line of business is the Charles River Investment Management Solution, a technology offering which is designed to automate and simplify the institutional investment process across asset classes, from portfolio management and risk analytics through trading and post-trade settlement, with integrated compliance and managed data throughout. With the acquisition of CRD in 2018, we took the first step in building our front-to-back platform, State Street Alpha. In 2021, we further expanded State Street Alpha's technology offering with the acquisition of Mercatus, Inc., enabling the launch of Alpha for Private Markets. Today our State Street Alpha platform combines portfolio management, trading and execution, analytics and compliance tools, and advanced data aggregation and integration with other industry platforms and providers.

In 2021, we established State Street Digital to focus on the development of services related to digital assets and related technologies, such as blockchain, tokenization, cryptocurrency, and central bank digital currency, including the evolution of a new integrated business and digital operating model designed to support primarily our institutional clients' digital investment cycle.

Investment Management provides a broad range of investment management strategies and products for our clients through State Street Global Advisors. Our investment management strategies and products for equity, fixed income and cash assets, including core and enhanced indexing, multi-asset strategies, active quantitative and fundamental active capabilities and alternative investment strategies span the risk/reward spectrum of these investment products. Our AUM is currently primarily weighted to indexed strategies. In addition, we provide a breadth of services and solutions, including ESG investing, defined benefit and defined contribution products, and Global Fiduciary Solutions. State Street Global Advisors is also a provider of ETFs, including the SPDR® ETF brand.

Our investment servicing strategy is to focus on total client relationships and the full integration of our products and services across our client base through cross-selling opportunities. In general, our clients will use a combination of services, depending on their needs, rather than one product or service. For instance, a custody client may purchase securities finance and cash management services from different business units. Products and services that we provide to our clients are parts of an integrated offering to these clients. We price our products and services on the basis of overall client relationships and other factors; as a result, revenue may not necessarily reflect the stand-alone market price of these products and services within the business lines in the same way it would for separate business entities.

Our servicing and management fee revenue from the Investment Servicing and Investment Management business lines, including foreign exchange trading services and securities finance activities, represents approximately 70% to 80% of our consolidated total revenue. The remaining 20% to 30% is composed of software and processing fees, including front office software and data and lending related and other fees, as well as NII, which is largely generated by our investment of client deposits, short-term borrowings and long-term debt in a variety of assets, and net gains (losses) related to investment securities. These other revenue types are generally fully allocated to, or reside in, Investment Servicing and Investment Management.

Revenue and expenses are directly charged or allocated to our lines of business through management information systems. Assets and liabilities are allocated according to policies that support management's strategic and tactical goals. Capital is allocated based on the relative risks and capital requirements inherent in each business line, along with management judgment. Capital allocations may not be representative of the capital that might be required if these lines of business were separate business entities.

The following is a summary of our line of business results "Other" column for the periods indicated.

	Years Ended December 31,		
	Other		
(Dollars in millions)	**2022**	**2021**	**2020**
Fee revenue	**$ 23**	$ —	$ —
Other Income	**—**	111	—
Net repositioning charges	**(70)**	3	(133)
Net acquisition and restructuring costs	**(65)**	(65)	(50)
Legal and related expenses	**—**	(18)	9
Deferred incentive compensation expense acceleration	**—**	(147)	—
Other expenses	**(10)**	(35)	**—**
Total	**$ (122)**	$ (151)	$ (174)

The following is a summary of our line of business results for the periods indicated. The "Other" columns represent amounts that are not allocated to our two lines of business, including repositioning charges, employee costs, acquisition costs, revenue-related recoveries and certain legal accruals. In addition, the acceleration of deferred compensation of $147 million in 2021 was not allocated to our two lines of business. Prior reported results reflect reclassifications, for comparative purposes, related to management changes in methodologies associated with allocations of revenue and expenses to lines of business in 2022.

	Years Ended December 31,											
	Investment Servicing			Investment Management			Other			Total		
(Dollars in millions)	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Servicing fees	**$ 5,087**	$ 5,531	$ 5,157	**$ —**	$ —	$ —	**$ —**	$ —	$ —	**$ 5,087**	$ 5,531	$ 5,157
Management fees	**—**	—	—	**1,939**	2,053	1,880	**—**	—	—	**1,939**	2,053	1,880
Foreign exchange trading services	**1,271**	1,149	1,299	**82**	62	64	**23**	—	—	**1,376**	1,211	1,363
Securities finance	**397**	402	342	**19**	14	14	**—**	—	—	**416**	416	356
Software and processing fees	**789**	738	685	**—**	—	—	**—**	—	—	**789**	738	685
Other fee revenue[1]	**46**	59	31	**(47)**	4	27		—	—	**(1)**	63	58
Total fee revenue	**7,590**	7,879	7,514	**1,993**	2,133	1,985	**23**	—	—	**9,606**	10,012	9,499
Net interest income	**2,551**	1,919	2,211	**(7)**	(14)	(11)	**—**	—	—	**2,544**	1,905	2,200
Total other income	**(2)**	(1)	4	**—**	—	—	**—**	111	—	**(2)**	110	4
Total revenue	**10,139**	9,797	9,729	**1,986**	2,119	1,974	**23**	111	—	**12,148**	12,027	11,703
Provision for credit losses	**20**	(33)	88	**—**	—	—	**—**	—	—	**20**	(33)	88
Total expenses	**7,260**	7,182	7,071	**1,396**	1,445	1,471	**145**	262	174	**8,801**	8,889	8,716
Income before income tax expense	**$ 2,859**	$ 2,648	$ 2,570	**$ 590**	$ 674	$ 503	**$ (122)**	$ (151)	$ (174)	**$ 3,327**	$ 3,171	$ 2,899
Pre-tax margin	**28 %**	27 %	26 %	**30 %**	32 %	25 %				**27 %**	26 %	25 %
Average assets (in billions)	**$ 283.2**	$ 296.5	$ 266.4	**$ 3.2**	$ 3.2	$ 2.9				**$ 286.4**	$ 299.7	$ 269.3

[1] Investment Management includes other revenue items that are primarily driven by equity market movements.

Note 25. Revenue from Contracts with Customers

We account for revenue from contracts with customers in accordance with ASC 606. The amount of revenue that we recognize is measured based on the consideration specified in contracts with our customers, and excludes taxes collected from customers subsequently remitted to governmental authorities. We recognize revenue when a performance obligation is satisfied over time as the services are performed or at a point in time depending on the nature of the services provided as further discussed below. Revenue recognition guidance related to contracts with customers excludes our NII, revenue earned on security lending transactions entered into as principal, realized gains/losses on securities, revenue earned on foreign exchange activity, loans and related fees, and gains/losses on hedging and derivatives, to which we apply other applicable U.S. GAAP guidance.

For contracts with multiple performance obligations, or contracts that have been combined, we allocate the contracts' transaction price to each performance obligation using our best estimate of the standalone selling price. Our contractual fees are negotiated on a customer by customer basis and are representative of standalone selling price utilized for allocating revenue when there are multiple performance obligations.

Substantially all of our services are provided as a distinct series of daily performance obligations that the customer simultaneously benefits from as they are performed. Payments may be made to third party service providers and the expense is recognized gross when we control those services as we are deemed the principal.

Contract durations may vary from short- to long- term or may be open ended. Termination notice periods are in line with general market practice and typically do not include termination penalties. Therefore, for substantially all of our revenues, the duration of the contract and the enforceable rights and obligations do not extend beyond the services that are performed daily or at the transaction level. In instances where we have substantive termination penalties, the duration of the contract may extend through the date of substantive termination penalties.

Investment Servicing

Revenue from contracts with customers related to servicing fees is recognized over time as our customers benefit from the custody, administration, accounting, transfer agency and other related asset services as they are performed. At contract inception, no revenue is estimated as the fees are dependent on assets under custody and/or administration and/or actual transactions which are susceptible to market factors outside of our control. Therefore, revenue is recognized using a time-based output method as the customers benefit from the services over time and as the assets under custody or transactions are known or determinable during each reporting period based on contractual fee schedules. Payments made to third party service providers, such as sub-custodians, are generally recognized gross as we control those services and are deemed to be a principal in such arrangements.

Foreign exchange trading services revenue includes revenue generated from providing access and use of electronic trading platforms and other trading, transition management and brokerage services. Electronic FX services are dependent on the volume of actual transactions initiated through our electronic exchange platforms. Revenue is recognized over time using a time-based measure as access to, and use of, the electronic exchange platforms is made available to the customer and the activity is determinable. Revenue related to other trading, transition management and brokerage services is recognized when the customer obtains the benefit of such services which may be over time or at a point in time upon trade execution.

Securities finance revenue is related to services for providing agency lending programs to State Street Global Advisors managed investment funds and third-party investment managers and asset owners. This securities finance revenue is recognized over time using a time-based measure as our customers benefit from these lending services over time.

Revenue related to the front office solutions provided by CRD is primarily driven by the sale of licenses and software as service arrangements, including professional services such as consulting and implementation services, software support and maintenance. Revenue for a sale of software to be installed on premise is recognized at a point in time when the customer benefits from obtaining access to and use of the software license. Revenue for a SaaS related arrangement is recognized over time as services are provided.

Investment Management

Revenue from contracts with customers related to investment management, investment research and investment advisory services provided through State Street Global Advisors is recognized over time as our customers benefit from the services as they are performed. Substantially all of our investment management fees are determined by the value of assets under management and the investment strategies employed. At contract inception, no revenue is estimated as the fees are dependent on assets under management which are susceptible to market factors outside of our control.

Therefore, substantially all of our Investment Management services revenue is recognized using a time-based output method as the customers benefit from the services over time and as the assets under management are known or determinable during each reporting period based on contractual fee schedules. Payments made to third party service providers, such as payments to others in unitary fee arrangements, are generally recognized on a gross basis when State Street Global Advisors controls those services and is deemed to be a principal in such transactions.

Revenue by category

In the following table, revenue is disaggregated by our two lines of business and by revenue stream for which the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors. The amounts in the "Other" columns were not allocated to our business lines.

	Year Ended December 31, 2022									
	Investment Servicing			Investment Management			Other			Total
(Dollars in millions)	Topic 606 revenue	All other revenue	Total	Topic 606 revenue	All other revenue	Total	Topic 606 revenue	All other revenue	Total	2022
Servicing fees	$ 5,087	$ —	$ 5,087	$ —	$ —	$ —	$ —	$ —	$ —	$ 5,087
Management fees	—	—	—	1,939	—	1,939	—	—	—	1,939
Foreign exchange trading services	363	908	1,271	82	—	82	—	23	23	1,376
Securities finance	233	164	397	—	19	19	—	—	—	416
Software and processing fees	599	190	789	—	—	—	—	—	—	789
Other fee revenue	—	46	46		(47)	(47)	—	—	—	(1)
Total fee revenue	6,282	1,308	7,590	2,021	(28)	1,993	—	23	23	9,606
Net interest income	—	2,551	2,551	—	(7)	(7)	—	—	—	2,544
Total other income	—	(2)	(2)	—	—	—	—	—	—	(2)
Total revenue	$ 6,282	$ 3,857	$ 10,139	$ 2,021	$ (35)	$ 1,986	$ —	$ 23	$ 23	$ 12,148

	Year Ended December 31, 2021									
	Investment Servicing			Investment Management			Other			Total
(Dollars in millions)	Topic 606 revenue	All other revenue	Total	Topic 606 revenue	All other revenue	Total	Topic 606 revenue	All other revenue	Total	2021
Servicing fees	$ 5,531	$ —	$ 5,531	$ —	$ —	$ —	$ —	$ —	$ —	$ 5,531
Management fees	—	—	—	2,053	—	2,053	—	—	—	2,053
Foreign exchange trading services	342	807	1,149	62	—	62	—	—	—	1,211
Securities finance	235	167	402	—	14	14	—	—	—	416
Software and processing fees	535	203	738	—	—	—	—	—	—	738
Other fee revenue	—	59	59	—	4	4	—	—	—	63
Total fee revenue	6,643	1,236	7,879	2,115	18	2,133	—	—	—	10,012
Net interest income	—	1,919	1,919	—	(14)	(14)	—	—	—	1,905
Total other income	—	(1)	(1)	—	—	—	—	111	111	110
Total revenue	$ 6,643	$ 3,154	$ 9,797	$ 2,115	$ 4	$ 2,119	$ —	$ 111	$ 111	$ 12,027

	Year Ended December 31, 2020									
	Investment Servicing			Investment Management			Other			Total
(Dollars in millions)	Topic 606 revenue	All other revenue	Total	Topic 606 revenue	All other revenue	Total	Topic 606 revenue	All other revenue	Total	2020
Servicing fees	$ 5,157	$ —	$ 5,157	$ —	$ —	$ —	$ —	$ —	$ —	$ 5,157
Management fees	—	—	—	1,880	—	1,880	—	—	—	1,880
Foreign exchange trading services	377	922	1,299	64	—	64	—	—	—	1,363
Securities finance	225	117	342	—	14	14	—	—	—	356
Software and processing fees	496	189	685	—	—	—	—	—	—	685
Other fee revenue	—	31	31	—	27	27	—	—	—	58
Total fee revenue	6,255	1,259	7,514	1,944	41	1,985	—	—	—	9,499
Net interest income	—	2,211	2,211	—	(11)	(11)	—	—	—	2,200
Total other income	—	4	4	—	—	—	—	—	—	4
Total revenue	$ 6,255	$ 3,474	$ 9,729	$ 1,944	$ 30	$ 1,974	$ —	$ —	$ —	$ 11,703

Contract balances and contract costs

As of December 31, 2022 and 2021, net receivables of $2.63 billion and $2.76 billion, respectively, are included in accrued interest and fees receivable, representing amounts billed or currently billable related to revenue from contracts with customers. As performance obligations are satisfied, we have an unconditional right to payment and billing is generally performed monthly or quarterly; therefore, we do not have significant contract assets.

We had $138 million and $130 million of deferred revenue as of December 31, 2022 and 2021, respectively. Deferred revenue is a contract liability which represents payments received and accounts receivable recorded in advance of providing services and is included in accrued expenses and other liabilities in the consolidated

statement of condition. In 2022, we recognized revenue of $109 million relating to deferred revenue as of December 31, 2021.

Transaction price allocated to the remaining performance obligations represents future, non-cancelable contracted revenue that has not yet been recognized, inclusive of deferred revenue that has been invoiced and non-cancelable amounts that will be invoiced and recognized as revenue in future periods. As of December 31, 2022, total remaining non-cancelable performance obligations for services and products not yet delivered, primarily comprised of software license sales and SaaS, were approximately $1.4 billion. We expect to recognize approximately half of this amount in revenue over the next three years, with the remainder to be recognized thereafter.

No adjustments are made to the promised amount of consideration for the effects of a significant financing component as the period between when we transfer a promised service to a customer and when the customer pays for that service is expected to be one year or less.

Note 26. Non-U.S. Activities

We define our non-U.S. activities as those revenue-producing business activities that arise from clients which are generally serviced or managed outside the U.S. Due to the integrated nature of our business, precise segregation of our U.S. and non-U.S. activities is not possible.

Subjective estimates, assumptions and other judgments are applied to quantify the financial results and assets related to our non-U.S. activities, including our application of funds transfer pricing, our asset and liability management policies and our allocation of certain indirect corporate expenses. Management periodically reviews and updates its processes for quantifying the financial results and assets related to our non-U.S. activities.

The following table presents our U.S. and non-U.S. financial results for the periods indicated:

	Years Ended December 31,								
	2022			2021			2020		
(In millions)	Non-U.S.(1)	U.S.	Total	Non-U.S.(1)	U.S.	Total	Non-U.S.(1)	U.S.	Total
Total revenue	**$ 5,170**	**$ 6,978**	**$ 12,148**	$ 5,397	$ 6,630	$ 12,027	$ 5,177	$ 6,526	$ 11,703
Income before income tax expense	**1,358**	**1,969**	**3,327**	1,590	1,581	3,171	1,326	1,573	2,899

(1) Geographic mix is generally based on the domicile of the entity servicing the funds and is not necessarily representative of the underlying asset mix.

Non-U.S. assets were $96.34 billion and $102.61 billion as of December 31, 2022 and 2021, respectively.

Note 27. Parent Company Financial Statements

The following tables present the financial statements of the Parent Company without consolidation of its banking and non-banking subsidiaries, as of and for the years indicated:

Statement of Income - Parent Company

	Years Ended December 31,		
(In millions)	2022	2021	2020
Cash dividends from consolidated banking subsidiary	**$ 1,500**	$ —	$ 2,721
Cash dividends from consolidated non-banking subsidiaries and unconsolidated entities	**198**	170	118
Other, net	**69**	49	92
Total revenue	**1,767**	219	2,931
Interest expense	**426**	239	324
Other expenses	**93**	315	172
Total expenses	**519**	554	496
Income tax (benefit)	**(121)**	(153)	(109)
Income (Loss) before equity in undistributed income of consolidated subsidiaries and unconsolidated entities	**1,369**	(182)	2,544
Equity in undistributed income of consolidated subsidiaries and unconsolidated entities:			
Consolidated banking subsidiary	**1,275**	2,657	(277)
Consolidated non-banking subsidiaries and unconsolidated entities	**130**	218	153
Net income	**$ 2,774**	$ 2,693	$ 2,420

Statement of Condition - Parent Company

(In millions)	As of December 31, 2022	2021
Assets:		
Interest-bearing deposits with consolidated banking subsidiary	**$ 460**	$ 482
Trading account assets	**425**	440
Investment securities available-for-sale	**260**	150
Investments in subsidiaries:		
Consolidated banking subsidiary	**26,579**	27,821
Consolidated non-banking subsidiaries	**9,151**	9,060
Unconsolidated entities	**121**	122
Notes and other receivables from:		
Consolidated banking subsidiary	**—**	80
Consolidated non-banking subsidiaries and unconsolidated entities	**3,512**	5,029
Other assets	**205**	256
Total assets	**$ 40,713**	$ 43,440
Liabilities:		
Notes and other payables to:		
Consolidated banking subsidiary	**$ 22**	$ —
Consolidated non-banking subsidiaries and unconsolidated entities	**214**	2,303
Accrued expenses and other liabilities	**509**	523
Long-term debt	**14,777**	13,250
Total liabilities	**15,522**	16,076
Shareholders' equity	**25,191**	27,364
Total liabilities and shareholders' equity	**$ 40,713**	$ 43,440

Statement of Cash Flows - Parent Company

(In millions)	Years Ended December 31, 2022	2021	2020
Net cash provided by (used in) operating activities	**$ 1,608**	$ (116)	$ 3,513
Investing Activities:			
Net decrease (increase) in interest-bearing deposits with consolidated banking subsidiary	**22**	10	(64)
Proceeds from sales and maturities of available-for-sale securities	**780**	525	1,000
Purchases of available-for-sale securities	**(886)**	(575)	(849)
Investments in consolidated banking and non-banking subsidiaries	**(16,252)**	(6,288)	(7,406)
Sale or repayment of investment in consolidated banking and non-banking subsidiaries	**15,092**	7,006	4,999
Net cash (used in) provided by investing activities	**(1,244)**	678	(2,320)
Financing Activities:			
Proceeds from issuance of long-term debt, net of issuance costs	**3,731**	1,343	2,489
Payments for long-term debt	**(1,500)**	(1,500)	(1,700)
Payments for redemption of preferred stock	**—**	(500)	(500)
Proceeds from issuance of common stock, net of issuance costs	**—**	1,900	—
Repurchases of common stock	**(1,500)**	(900)	(515)
Repurchases of common stock for employee tax withholding	**(123)**	(39)	(78)
Payments for cash dividends	**(972)**	(866)	(889)
Net cash (used in) financing activities	**(364)**	(562)	(1,193)
Net change	**—**	—	—
Cash and due from banks at beginning of year	**—**	—	—
Cash and due from banks at end of year	**$ —**	$ —	$ —

Note 28. Subsequent Events

On January 26, 2023, we issued $500 million aggregate principal amount of 4.857% fixed-to-floating rate senior notes due 2026 and $750 million aggregate principal amount of 4.821% fixed-to-floating rate senior notes due 2034.

STATISTICAL DISCLOSURE BY BANK HOLDING COMPANIES

Distribution of Average Assets, Liabilities and Shareholders' Equity; Interest Rates and Interest Differential (Unaudited)

The following table presents consolidated average statements of condition and NII for the years indicated:

	Years Ended December 31,								
	2022			2021			2020		
(Dollars in millions; fully taxable-equivalent basis)	Average Balance	Interest	Average Rate	Average Balance	Interest	Average Rate	Average Balance	Interest	Average Rate
Assets:									
Interest-bearing deposits with U.S. banks	**$ 28,415**	**$ 563**	**1.98 %**	$ 28,584	$ 41	.14 %	$ 30,866	$ 101	.33 %
Interest-bearing deposits with non-U.S. banks	**48,083**	**279**	**.58**	61,412	(56)	(.09)	45,722	(25)	(.06)
Securities purchased under resale agreements	**2,116**	**188**	**8.88**	4,193	27	.63	3,452	126	3.64
Trading account assets	**721**	**—**	**.01**	752	—	.01	878	—	—
Investment securities:									
U.S. Treasury and federal agencies[1]	**73,261**	**1,126**	**1.54**	66,195	873	1.32	60,816	1,174	1.93
State and political subdivisions[1]	**1,053**	**33**	**3.15**	1,451	44	3.06	1,717	51	2.95
Other investments	**37,615**	**553**	**1.47**	43,770	331	.76	38,459	366	.95
Investment securities held-to-maturity purchased under money market liquidity facility	**—**	**—**	**—**	314	4	1.35	8,183	117	1.43
Loans	**35,117**	**973**	**2.77**	31,009	640	2.07	27,525	627	2.28
Other interest-earning assets	**20,850**	**383**	**1.84**	22,355	17	.08	11,256	55	.49
Total interest-earning assets[1]	**247,231**	**4,098**	**1.66**	260,035	1,921	0.74	228,874	2,592	1.13
Cash and due from banks	**3,652**			5,057			3,849		
Other assets	**35,547**			34,651			36,611		
Total assets	**$ 286,430**			$ 299,743			$ 269,334		
Liabilities and shareholders' equity:									
Interest-bearing deposits:									
Time	**$ 524**	**$ 23**	**— %**	$ —	$ —	— %	$ 7,114	$ 23	.32 %
Savings	**97,728**	**864**	**.88**	104,848	10	.01	80,330	91	.11
Non-U.S.	**76,842**	**80**	**.10**	82,126	(273)	(.33)	68,806	(231)	.34
Total interest-bearing deposits	**175,094**	**967**	**.55**	186,974	(263)	(.14)	156,250	(117)	.51
Securities sold under repurchase agreements	**3,633**	**14**	**.39**	667	—	—	2,615	4	.14
Short-term borrowings under money market liquidity facility	**—**	**—**	**—**	315	4	1.21	8,207	101	1.22
Other short-term borrowings	**1,188**	**26**	**2.18**	788	2	.21	2,226	18	.78
Long-term debt	**14,132**	**376**	**2.66**	13,383	219	1.64	14,371	312	2.17
Other interest-bearing liabilities	**2,725**	**161**	**5.91**	5,486	41	.75	3,176	57	1.82
Total interest-bearing liabilities	**196,772**	**1,544**	**.78**	207,613	3	—	186,845	375	.20
Non-interest-bearing deposits:									
Special time	**—**			—			7,196		
Demand	**46,730**			47,747			29,187		
Non-U.S.[2]	**1,050**			683			592		
Other liabilities	**15,992**			17,615			20,464		
Shareholders' equity	**25,886**			26,085			25,050		
Total liabilities and shareholders' equity	**$ 286,430**			$ 299,743			$ 269,334		
Net interest income, fully taxable-equivalent basis		**$ 2,554**			$ 1,918			$ 2,217	
Excess of rate earned over rate paid			**.87 %**			.74 %			.93 %
Net interest margin[3]			**1.03**			.74			.97

[1] Fully taxable-equivalent revenue is a method of presentation in which the tax savings achieved by investing in tax-exempt investment securities and certain leases are included in interest income with a corresponding charge to income tax expense. This method facilitates the comparison of the performance of these assets. The adjustments are computed using a federal income tax rate of 21% for periods ending in 2022, 2021 and 2020, adjusted for applicable state income taxes, net of the related federal tax benefit. The fully taxable-equivalent adjustments included in interest income presented above were $10 million, $13 million and $17 million for the years ended December 31, 2022, 2021 and 2020, respectively, and were substantially related to tax-exempt securities (state and political subdivisions).

[2] Non-U.S. non-interest-bearing deposits were $2.30 billion, $968 million and $784 million as of December 31, 2022, 2021 and 2020, respectively.

[3] NIM is calculated by dividing fully taxable-equivalent NII by average total interest-earning assets.

STATISTICAL DISCLOSURE BY BANK HOLDING COMPANIES (CONTINUED)

The following table summarizes changes in fully taxable-equivalent interest income and interest expense due to changes in volume of interest-earning assets and interest-bearing liabilities, and due to changes in interest rates. Changes attributed to both volumes and rates have been allocated based on the proportion of change in each category.

Years Ended December 31,	2022 Compared to 2021			2021 Compared to 2020		
(Dollars in millions; fully taxable-equivalent basis)	Change in Volume	Change in Rate	Net (Decrease) Increase	Change in Volume	Change in Rate	Net (Decrease) Increase
Interest income related to:						
Interest-bearing deposits with U.S. banks	$ —	$ 522	$ 522	$ (8)	$ (52)	$ (60)
Interest-bearing deposits with non-U.S. banks	12	323	335	(9)	(22)	(31)
Securities purchased under resale agreements	(13)	174	161	27	(126)	(99)
Trading account assets	—	—	—	—	—	—
Investment securities:						
U.S. Treasury and federal agencies	93	160	253	104	(405)	(301)
State and political subdivisions	(12)	1	(11)	(8)	1	(7)
Other investments	(47)	269	222	50	(85)	(35)
Investment securities held-to-maturity purchased under money market liquidity facility	(4)	—	(4)	(113)	—	(113)
Loans	85	248	333	79	(66)	13
Other interest-earning assets	(1)	367	366	54	(92)	(38)
Total interest-earning assets	113	2,064	2,177	176	(847)	(671)
Interest expense related to:						
Deposits:						
Time	—	23	23	(23)	—	(23)
Savings	(1)	855	854	28	(109)	(81)
Non-U.S.	17	336	353	(45)	3	(42)
Securities sold under repurchase agreements	—	14	14	(3)	(1)	(4)
Short-term borrowings under money market liquidity facility	(4)	—	(4)	(96)	(1)	(97)
Other short-term borrowings	1	23	24	(11)	(5)	(16)
Long-term debt	12	145	157	(21)	(72)	(93)
Other interest-bearing liabilities	(21)	141	120	42	(58)	(16)
Total interest-bearing liabilities	4	1,537	1,541	(129)	(243)	(372)
Net interest income	$ 109	$ 527	$ 636	$ 305	$ (604)	$ (299)

ACRONYMS

ABS	Asset-backed securities
AFS	Available-for-sale
AML	Anti-money laundering
AOCI	Accumulated other comprehensive income (loss)
ASU	Accounting Standards Update
AUC/A	Assets under custody and/or administration
AUM	Assets under management
BBH	Brown Brothers Harriman & Co
BCC	Business Conduct Committee
bps	Basis points
CAP	Capital adequacy process
CCAR	Comprehensive Capital Analysis and Review
CCB	Capital conservation buffer
CECL	Current Expected Credit Loss
CET1[1]	Common equity tier 1
CFTC	Commodity Futures Trading Commission
CLO	Collateralized Loan Obligation
CMRC	Credit and Market Risk Committee
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CRD	Charles River Development
CRO	Chief Risk Officer
CVA	Credit valuation adjustment
DOJ	Department of Justice
DOL	Department of Labor
E&A Committee	Examining and Audit Committee
ECB	European Central Bank
EEO	Equal Employment Opportunity
EGRRCPA	Economic Growth, Regulatory Relief, and Consumer Protection Act
EPS	Earnings per share
ERM	Enterprise Risk Management
ESG	Environmental, social and governance
ETF	Exchange-Traded Fund
E.U.	European Union
EVE	Economic value of equity
FDIC	Federal Deposit Insurance Corporation
FHLB	Federal Home Loan Bank of Boston
FICC	Fixed Income Clearing Corporation
FTE	Fully taxable-equivalent
FSOC	Financial Stability Oversight Council
FX	Foreign exchange
GAAP	Generally accepted accounting principles
GCR	Global credit review
GCS	Global Cybersecurity
GDPR	General data protection regulation
G-SIB	Global systemically important bank
HQLA[1]	High-quality liquid assets
HTM	Held-to-maturity
IDI	Insured Depository Institution
LCR[1]	Liquidity coverage ratio
LIHTC	Low income housing tax credits
LDA model	Loss distribution approach model
LIBOR	London Interbank Offered Rate
LTD	Long-term debt
MBS	Mortgage-backed securities
MMLF	Money Market Mutual Fund Liquidity Facility
MRAC	Management Risk and Capital Committee
MRC	Model Risk Committee
MRM	Model Risk Management
MVG	Model Validation Group
NII	Net interest income
NIM	Net interest margin
NOL	Net Operating Loss
NSFR[1]	Net stable funding ratio
OCC	Office of the Comptroller of the Currency
ORM	Operational risk management
OTC	Over-the-counter
PCA	Prompt corrective action
PCAOB	Public Company Accounting Oversight Board
PD[1]	Probability-of-default
P&L	Profit-and-loss
RC	Risk Committee
RWA[1]	Risk-weighted asset
SA-CCR	Standardized approach for counterparty credit risk
SCB	Stress Capital Buffer
SEC	Securities and Exchange Commission
SIFI	Systemically important financial institutions
SLB	Stress Leverage Buffer
SLR[1]	Supplementary leverage ratio
SOFR	Secured Overnight Financing Rate
SPDR	Spider; Standard and Poor's depository receipt
SPOE Strategy	Single Point of Entry Strategy
SSIF	State Street Intermediate Funding, LLC
TLAC[1]	Total loss-absorbing capacity
TOPS	Technology and Operations Committee
TORC	Technology and Operational Risk Committee
UCITS	Undertakings for Collective Investments in Transferable Securities
U.K.	United Kingdom
UOM	Unit of measure
U.S.	United States of America
USD	U.S. dollar
VaR	Value-at-Risk
VIE	Variable interest entity
WD	Withdrawn

[1] As defined by the applicable U.S. regulations.

GLOSSARY

Asset-backed securities: A financial security backed by collateralized assets, other than real estate or mortgage backed securities.

Assets under custody and/or administration: Assets that we hold directly or indirectly on behalf of clients under a safekeeping or custody arrangement or for which we provide administrative services for clients. To the extent that we provide more than one AUC/A service (including back and middle office services) for a client's assets, the value of the asset is only counted once in the total amount of AUC/A.

Assets under management: The total market value of client assets for which we provide investment management strategy services, advisory services and/or distribution services generating management fees based on a percentage of the assets' market values. These client assets are not included on our balance sheet. Assets under management include managed assets lost but not liquidated. Lost business occurs from time to time and it is difficult to predict the timing of client behavior in transitioning these assets as the timing can vary significantly.

Beacon: A multi-year program, announced in October 2015, to create cost efficiencies through changes in our operational processes and to further digitize our processes and interfaces with our clients.

Certificates of deposit: A savings certificate with a fixed maturity date, specified fixed interest rate and can be issued in any denomination aside from minimum investment requirements. A CD restricts access to the funds until the maturity date of the investment.

Collateralized loan obligations: A loan or security backed by a pool of debt, primarily senior secured leveraged loans. CLOs are similar to collateralized mortgage obligations, except for the different type of underlying loan. With a CLO, the investor receives scheduled loan or debt payments from the underlying loans, assuming most of the risk in the event borrowers default, but is offered greater diversity and the potential for higher-than-average returns.

Commercial real estate: Property intended to generate profit from capital gains or rental income. CRE loans are term loans secured by commercial and multifamily properties. We seek CRE loans with strong competitive positions in major domestic markets, stable cash flows, modest leverage and experienced institutional ownership.

Deposit beta: A measure of how much of an interest rate increase is expected to be passed on to client interest-bearing accounts, on average.

Depot bank: A German term, specified by the country's law on investment companies, which essentially corresponds to 'custodian'.

Doubtful: Doubtful loans and leases meet the same definition of substandard loans and leases (i.e., well-defined weaknesses that jeopardize repayment with the possibility that we will sustain some loss) with the added characteristic that the weaknesses make collection or liquidation in full highly questionable and improbable.

Economic value of equity: A measure designed to estimate the fair value of assets, liabilities and off-balance sheet instruments based on a discounted cash flow model.

Exchange-Traded Fund: A type of exchange-traded investment product that offer investors a way to pool their money in a fund that makes investments in stocks, bonds, or other assets and, in return, to receive an interest in that investment pool. ETF shares are traded on a national stock exchange and at market prices that may or may not be the same as the net asset value.

Exposure-at-default: A measure used in the calculation of regulatory capital under Basel III final rule. It can be defined as the expected amount of loss a bank may be exposed to upon default of an obligor.

Global systemically important bank: A financial institution whose distress or disorderly failure, because of its size, complexity and systemic interconnectedness, would cause significant disruption to the wider financial system and economic activity, which will be subject to additional capital requirements.

Held-to-maturity investment securities: We classify investments in debt securities as held-to-maturity only if we have the positive intent and ability to hold those securities to maturity. Investments in debt securities classified as held-to-maturity are measured subsequently at amortized cost in the statement of financial condition.

High-quality liquid assets: Cash or assets that can be converted into cash at little or no loss of value in private markets and are considered unencumbered.

Investment grade: A rating of loans and leases to counterparties with strong credit quality and low expected credit risk and probability of default. It applies to counterparties with a strong capacity to support the timely repayment of any financial commitment.

Liquidity coverage ratio: The ratio of encumbered high-quality liquid assets divided by expected total net cash outflows over a 30-day stress period. A Basel III framework requirement for banks and bank holding companies to measure liquidity, it is designed to ensure that certain banking institutions, including us, maintain a minimum amount of unencumbered HQLA sufficient to withstand the net cash outflow under a hypothetical standardized acute liquidity stress scenario for a 30-day stress period.

Net asset value: The amount of net assets attributable to each share/unit of the fund at a specific date or time.

Net stable funding ratio: The ratio of the amount of available stable funding relative to the amount of required stable funding. This ratio should be equal to at least 100% on an ongoing basis.

On-premises revenue: Revenue derived from locally installed software.

Probability of default: A measure of the likelihood that a credit obligor will enter into default status.

Qualified financial contracts: Securities contracts, commodity contracts, forward contracts, repurchase agreements, swap agreements and any other contract determined by the FDIC to be a qualified financial contract.

Risk-weighted assets: A measurement used to quantify risk inherent in our on and off-balance sheet assets by adjusting the asset value for risk. RWA is used in the calculation of our risk-based capital ratios.

Software-enabled revenue: Includes SaaS, maintenance and support revenue, FIX, brokerage, and value-add services.

Special mention: Loans and leases that consist of counterparties with potential weaknesses that, if uncorrected, may result in deterioration of repayment prospects.

Speculative: Loans and leases that consist of counterparties that face ongoing uncertainties or exposure to business, financial, or economic downturns. However, these counterparties may have financial flexibility or access to financial alternatives, which allow for financial commitments to be met.

Substandard: Loans and leases that consist of counterparties with well-defined weakness that jeopardizes repayment with the possibility we will sustain some loss.

Supplementary leverage ratio: The ratio of our Tier 1 capital to our total leverage exposure, which measures our capital adequacy relative to our on and off-balance sheet assets.

Total loss-absorbing capacity: The sum of our Tier 1 regulatory capital plus eligible external long-term debt issued by us.

Value-at-Risk: Statistical model used to measure the potential loss in value of a portfolio that could occur in normal markets condition, over a defined holding period, within a certain confidence level.

Variable interest entity: An entity that: (1) lacks enough equity investment at risk to permit the entity to finance its activities without additional financial support from other parties; (2) has equity owners that lack the right to make significant decisions affecting the entity's operations; and/or (3) has equity owners that do not have an obligation to absorb or the right to receive the entity's losses or return.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

State Street has established and maintains disclosure controls and procedures that are designed to ensure that material information related to State Street and its subsidiaries on a consolidated basis required to be disclosed in its reports filed or submitted under the Securities Exchange Act of 1934 is recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to State Street's management, including its Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. For the year ended December 31, 2022, State Street's management carried out an evaluation, with the participation of the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of State Street's disclosure controls and procedures. Based on the evaluation of these disclosure controls and procedures, the Chief Executive Officer and Chief Financial Officer concluded that State Street's disclosure controls and procedures were effective as of December 31, 2022.

State Street has also established and maintains internal control over financial reporting as a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external purposes in conformity with U.S. GAAP. In the ordinary course of business, State Street routinely enhances its internal controls and procedures for financial reporting by either upgrading its current systems or implementing new systems. Changes have been made and may be made to State Street's internal controls and procedures for financial reporting as a result of these efforts. During the quarter ended December 31, 2022, no change occurred in State Street's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, State Street's internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

The management of State Street is responsible for establishing and maintaining adequate internal control over financial reporting.

State Street'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 accounting principles generally accepted in the United States of America. State Street's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of State Street; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States of America, and that receipts and expenditures of State Street are being made only in accordance with authorizations of management and directors of State Street; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of State Street'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.

Management assessed the effectiveness of State Street's internal control over financial reporting as of December 31, 2022 based on the framework set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control - Integrated Framework (2013).*

Based on that assessment, management concluded that, as of December 31, 2022, State Street's internal control over financial reporting is effective.

The effectiveness of State Street's internal control over financial reporting as of December 31, 2022 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their accompanying report, which follows this report.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of State Street Corporation

Opinion on Internal Control over Financial Reporting

We have audited State Street Corporation's (the "Corporation") internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the "COSO criteria"). In our opinion, the Corporation maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the 2022 consolidated financial statements of the Corporation and our report dated February 16, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

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

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

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

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ Ernst & Young LLP

Boston, Massachusetts
February 16, 2023

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information concerning our directors will appear in our Proxy Statement for the 2023 Annual Meeting of Shareholders, to be filed pursuant to Regulation 14A on or before May 1, 2023, referred to as the 2023 Proxy Statement, under the caption "Election of Directors." Information concerning compliance with Section 16(a) of the Exchange Act, if required, will appear in our 2023 Proxy Statement under the caption "Delinquent Section 16(a) Reports." Information concerning our Code of Ethics for Senior Financial Officers and our Examining and Audit Committee will appear in our 2023 Proxy Statement under the caption "Corporate Governance at State Street." Such information is incorporated herein by reference.

Information about our executive officers is included under Part I.

ITEM 11. EXECUTIVE COMPENSATION

Information in response to this item will appear in our 2023 Proxy Statement under the captions "Executive Compensation" and "Non-Management Director Compensation." Such information (other than the information required by Item 402(v) of Regulation S-K) is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information concerning security ownership of certain beneficial owners and management will appear in our 2023 Proxy Statement under the caption “Security Ownership of Certain Beneficial Owners and Management.” Such information is incorporated herein by reference.

RELATED STOCKHOLDER MATTERS

The following table presents the number of outstanding common stock awards, options, warrants and rights granted by State Street to participants in our equity compensation plans, as well as the number of securities available for future issuance under these plans, as of December 31, 2022. The table provides this information separately for equity compensation plans that have and have not been approved by shareholders. Shares presented in the table and in the footnotes following the table are stated in thousands of shares.

(Shares in thousands)	(a) Number of securities to be issued upon exercise of outstanding options, warrants and rights	(b) Weighted-average exercise price of outstanding options, warrants and rights[1]	(c) Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
Plan category:			
Equity compensation plans approved by shareholders	**7,575** [2]	**$ —**	**14,892**
Equity compensation plans not approved by shareholders	**18** [3]	**—**	**—**
Total	**7,593**	**—**	**14,892**

[1] Excludes deferred stock awards and performance awards for which there is no exercise price.
[2] Consists of 5,279 thousand shares subject to deferred stock awards, zero shares subject to stock options, zero stock appreciation rights and 2,296 thousand shares subject to performance awards (assuming payout at 100% for all awards, including awards for which performance is uncertain).
[3] Consists of shares subject to deferral.

Individual directors who are not our employees have received stock awards and cash retainers, both of which may be deferred. Directors may elect to receive shares of our common stock in place of cash. If payment is in the form of common stock, the number of shares is determined by dividing the approved cash amount by the closing price on the date of the annual shareholders' meeting or date of grant, if different. All deferred shares, whether stock awards or common stock received in place of cash retainers, are increased to reflect dividends paid on the common stock and, for certain directors, may include share amounts in respect of an accrual under a terminated retirement plan.

Pursuant to State Street's Deferred Compensation Plan for Directors, non-employee directors may elect to defer the receipt of 0% or 100% of their (1) retainers, (2) meeting fees or (3) annual equity grant award. Non-employee directors also may elect to receive their retainers in cash or shares of common stock. Non-employee directors who elect to defer the cash payment of their retainers or meeting fees may choose from four notional investment fund returns for such deferred cash. Deferrals of common stock are adjusted to reflect the hypothetical reinvestment in additional shares of common stock for any dividends or distributions on State Street common stock. Deferred amounts will be paid (a) as elected by the non-employee director, on either the date of their termination of service on the Board or on the earlier of such termination and a future date specified, and (b) in the form elected by the non-employee director as either a lump sum or in installments over a two- to five-year period.

Stock awards totaling 265,902 shares of common stock were outstanding as of December 31, 2022; awards made through June 30, 2003, totaling 18,324 shares outstanding as of December 31, 2022, have not been approved by shareholders. There are no other equity compensation plans under which our equity securities are authorized for issuance that have been adopted without shareholder approval. Awards of stock made or retainer shares paid to individual directors after June 30, 2003 have been or will be made under our 1997, 2006 or 2017 Equity Incentive Plan, which were approved by shareholders.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information concerning certain relationships and related transactions and director independence will appear in our 2023 Proxy Statement under the caption "Corporate Governance at State Street." Such information is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information concerning principal accounting fees and services and the Examining and Audit Committee's pre-approval policies and procedures will appear in our 2023 Proxy Statement under the caption "Examining and Audit Committee Matters." Such information is incorporated herein by reference.

PART IV.

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(A)(1) FINANCIAL STATEMENTS

The following consolidated financial statements of State Street are included in Item 8 hereof:
Report of Independent Registered Public Accounting Firm
Consolidated Statement of Income - Years ended December 31, 2022, 2021 and 2020
Consolidated Statement of Comprehensive Income - Years ended December 31, 2022, 2021 and 2020
Consolidated Statement of Condition - As of December 31, 2022 and 2021
Consolidated Statement of Changes in Shareholders' Equity - Years ended December 31, 2022, 2021 and 2020
Consolidated Statement of Cash Flows - Years ended December 31, 2022, 2021 and 2020
Notes to Consolidated Financial Statements

(A)(2) FINANCIAL STATEMENT SCHEDULES

Certain schedules to the consolidated financial statements have been omitted if they were not required by Article 9 of Regulation S-X or if, under the related instructions, they were inapplicable, or the information was contained elsewhere herein.

(A)(3) EXHIBITS

The exhibits listed in the Exhibit Index preceding the signature page in this Form 10-K are filed herewith or are incorporated herein by reference to other SEC filings.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

EXHIBIT INDEX

3.1	Restated Articles of Organization, as amended (filed as Exhibit 3.1 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended September 30, 2018 filed with the SEC on October 31, 2018 and incorporated herein by reference)
3.2	By-laws, as amended (filed as Exhibit 3.1 to State Street's Current Report on Form 8-K (File No.001-07511) filed with the SEC on December 16, 2022 and incorporated herein by reference)
4.1	Description of Securities Registered under Section 12 of the Exchange Act
4.2	Deposit Agreement, dated March 4, 2014, among State Street Corporation, American Stock Transfer & Trust Company, LLC (as depositary), and the holders from time to time of depositary receipts (filed as Exhibit 4.1 to State Street's Current Report on Form 8-K (File No. 001-07511) dated March 4, 2014 filed with the SEC on March 4, 2014 and incorporated herein by reference)
4.3	Deposit Agreement dated May 21, 2015, among State Street Corporation, American Stock Transfer & Trust Company, LLC (as depositary) and the holders from time to time of depositary receipts (filed as Exhibit 4.1 to State Street's Current Report on Form 8-K (File No. 001-7511) dated May 21, 2015 filed with the SEC on May 21, 2015 and incorporated herein by reference)
4.4	Deposit Agreement dated April 11, 2016, among State Street Corporation, American Stock Transfer & Trust Company, LLC (as depositary) and the holders from time to time of depositary receipts (filed as Exhibit 4.1 to State Street's Current Report on Form 8-K (File No. 001-7511) dated April 11, 2016 filed with the SEC on April 11, 2016 and incorporated herein by reference)
4.5	Deposit Agreement dated September 27, 2018, among State Street Corporation, American Stock Transfer & Trust Company, LLC (as depositary) and the holders from time to time of the depositary receipts (filed as Exhibit 4.3 to State Street's Current Report on Form 8-K (File No. 001-07511) filed with the SEC on September 27, 2018 and incorporated herein by reference) (Note: None of the instruments defining the rights of holders of State Street's outstanding long-term debt are in respect of indebtedness in excess of 10% of the total assets of State Street and its subsidiaries on a consolidated basis. State Street hereby agrees to furnish to the SEC upon request a copy of any other instrument with respect to long-term debt of State Street and its subsidiaries.)
10.1†	State Street's Executive Supplemental Retirement Plan, as amended and restated, and First, Second and Third Amendments thereto (filed as Exhibit 10.2 to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2020 filed with the SEC on February 19, 2021 and incorporated herein by reference)
10.2†	Supplemental Cash Incentive Plan, as amended, First and Second Amendments thereto, and form of award agreement thereunder (filed as Exhibit 10.1 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended March 31, 2022 filed with the SEC on April 27, 2022 and incorporated herein by reference)
10.3†	State Street's 2017 Stock Incentive Plan, and forms of award agreements thereunder (filed as Exhibit 10.2 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended March 31, 2022 filed with the SEC on April 27, 2022 and incorporated herein by reference)
10.4†	State Street's Management Supplemental Savings Plan, Amended and Restated, as amended (filed as Exhibit 10.10 to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2016 filed with the SEC on February 17, 2017 and incorporated herein by reference)
10.5†	Deferred Compensation Plan for Directors of State Street Corporation, Restated January 1, 2007, as amended (filed as Exhibit 10.12 to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2011 filed with the SEC on February 27, 2012 and incorporated herein by reference)
10.6†	Deferred Compensation Plan for Directors of State Street Corporation, Restated January 1, 2021, as amended (filed as Exhibit 10.1 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended June 30, 2020 filed with the SEC on July 27, 2020 and incorporated herein by reference)

10.7	Deferred Prosecution Agreement dated January 17, 2017 between State Street Corporation and the U.S. Department of Justice and United States Attorney for the District of Massachusetts (filed as Exhibit 10.14 to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2016 filed with the SEC on February 17, 2017 and incorporated herein by reference)
10.8	Deferred Prosecution Agreement dated May 13, 2021 between State Street Corporation and the Office of the United States Attorney for the District of Massachusetts (filed as Exhibit 10.1 to State Street's Current Report on Form 8-K (File No. 001-07511) filed with the SEC on May 14, 2021 and incorporated herein by reference)
10.9†	Description of compensation arrangements for non-employee directors filed as Exhibit 10.2 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended June 30, 2022 filed with the SEC on July 28, 2022 and incorporated herein by reference)
10.10†	State Street's Executive Compensation Trust Agreement dated June 1, 2002 (Rabbi Trust), as amended (filed as Exhibit 10.22 to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2017 filed with the SEC on February 26, 2018 and incorporated herein by reference)
10.11A†	Form of Indemnification Agreement between State Street Corporation and each of its directors (filed as Exhibit 10.18A to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2013 filed with the SEC on February 21, 2014 and incorporated herein by reference)
10.11B†	Form of Indemnification Agreement between State Street Corporation and each of its executive officers (filed as Exhibit 10.18B to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2013 filed with the SEC on February 21, 2014 and incorporated herein by reference)
10.11C†	Form of Indemnification Agreement between State Street Bank and Trust Company and each of its directors (filed as Exhibit 10.18C to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2013 filed with the SEC on February 21, 2014 and incorporated herein by reference)
10.11D†	Form of Indemnification Agreement between State Street Bank and Trust Company and each of its executive officers (filed as Exhibit 10.18D to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2013 filed with the SEC on February 21, 2014 and incorporated herein by reference)
10.12†	Form of employment agreement for executive officers in the United States and Hong Kong (filed as Exhibit 10.1 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended March 31, 2020 filed with the SEC on April 28, 2020 and incorporated herein by reference)
10.13†	Employment Letter Agreements entered into with Andrew Erickson dated August 21, 2012, November 19, 2012, and May 25, 2016 (filed as Exhibit 10.2 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended March 31, 2018 filed with the SEC on May 3, 2018 and incorporated herein by reference)
10.14†	Employment Letter Agreement entered into with Eric Aboaf dated September 22, 2016 (filed as Exhibit 10.1 to State Street's Current Report on Form 8-K (File No. 001-07511) dated September 28, 2016 filed with the SEC on September 28, 2016 and incorporated herein by reference)
10.15†	Francisco Aristeguieta Employment Letter Agreement dated June 22, 2021 and Confidentiality, Intellectual Property and Restrictive Covenant Protective Agreement dated July 15, 2019 (filed as Exhibit 10.1 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended June 30, 2021 filed with the SEC on July 23, 2021 and incorporated herein by reference)
10.16†	Francisco Aristeguieta Transition and Separation Agreement dated May 9, 2022 (filed as Exhibit 10.1 to State Street's Quarterly Report on Form 10-Q (File No. 001-07511) for the quarter ended June 30, 2022 filed with the SEC on July 28, 2022 and incorporated herein by reference)
10.17†	State Street Corporation Incentive Compensation Program, Effective January 1, 2022

	10.18†	State Street Corporation Cash Award Plan, Effective January 1, 2019 (filed as Exhibit 10.25 to State Street's Annual Report on Form 10-K (File No. 001-07511) for the year ended December 31, 2018 filed with the SEC on February 21, 2019 and incorporated herein by reference)
	21	Subsidiaries of State Street Corporation
	23	Consent of Independent Registered Public Accounting Firm
	31.1	Rule 13a-14(a)/15d-14(a) Certification of Chairman, President and Chief Executive Officer
	31.2	Rule 13a-14(a)/15d-14(a) Certification of Chief Financial Officer
	32	Section 1350 Certifications
	101.INS	The instance document does not appear in the interactive data file because its XBRL tags are embedded within the inline XBRL document
*	101.SCH	Inline XBRL Taxonomy Extension Schema Document
*	101.CAL	Inline XBRL Taxonomy Calculation Linkbase Document
*	101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
*	101.LAB	Inline XBRL Taxonomy Label Linkbase Document
*	101.PRE	Inline XBRL Taxonomy Presentation Linkbase Document
*	104	Cover Page Interactive Data File (formatted as Inline XBRL and included within the Exhibit 101 attachments)

† Denotes management contract or compensatory plan or arrangement
* Submitted electronically herewith

Attached as Exhibit 101 to this report are the following formatted in iXBRL (Inline Extensible Business Reporting Language): (i) consolidated statement of income for the years ended December 31, 2022, 2021 and 2020, (ii) consolidated statement of comprehensive income for the years ended December 31, 2022, 2021 and 2020, (iii) consolidated statement of condition as of December 31, 2022 and 2021, (iv) consolidated statement of changes in shareholders' equity for the years ended December 31, 2022, 2021 and 2020, (v) consolidated statement of cash flows for the years ended December 31, 2022, 2021 and 2020, and (vi) notes to consolidated financial statements.

SIGNATURES

Pursuant to the requirement of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, on February 16, 2023, hereunto duly authorized.

STATE STREET CORPORATION

By /s/ ERIC W. ABOAF
ERIC W. ABOAF,
Vice Chairman and Chief Financial Officer

By /s/ IAN W. APPLEYARD
IAN W. APPLEYARD,
Executive Vice President, Global Controller and
Chief Accounting Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below on February 16, 2023 by the following persons on behalf of the registrant and in the capacities indicated.

OFFICERS:

/s/ RONALD P. O'HANLEY
RONALD P. O'HANLEY,
Chairman and Chief Executive Officer

/s/ ERIC W. ABOAF
ERIC W. ABOAF,
Vice Chairman and Chief Financial Officer

/s/ IAN W. APPLEYARD
IAN W. APPLEYARD,
Executive Vice President, Global Controller and
Chief Accounting Officer

DIRECTORS:

/s/ MARIE A. CHANDOHA
MARIE A. CHANDOHA

/s/ PATRICK de SAINT-AIGNAN
PATRICK de SAINT-AIGNAN

/s/ DONNALEE A. DEMAIO
DONNALEE A. DEMAIO

/s/ AMELIA C. FAWCETT
AMELIA C. FAWCETT

/s/ WILLIAM C. FREDA
WILLIAM C. FREDA

/s/ SARA MATHEW
SARA MATHEW

/s/ WILLIAM L. MEANEY
WILLIAM L. MEANEY

/s/ RONALD P. O'HANLEY
RONALD P. O'HANLEY

/s/ SEAN P. O'SULLIVAN
SEAN P. O'SULLIVAN

/s/ JULIO A. PORTALATIN
JULIO A. PORTALATIN

/s/ JOHN B. RHEA
JOHN B. RHEA

/s/ RICHARD P. SERGEL
RICHARD P. SERGEL

/s/ GREGORY L. SUMME
GREGORY L. SUMME

Exhibit 10.17

STATE STREET CORPORATION
INCENTIVE COMPENSATION PROGRAM
As amended and restated, effective for performance periods
beginning on or after January 1, 2022

Objectives:

The Program is designed to provide the framework for making Awards for purposes of:

- Linking total compensation opportunities to organizational, business line, risk management and individual performance during the applicable Performance Period.
- Attracting, retaining, rewarding and motivating professionals of the highest caliber.

Amendment or Termination:

- State Street reserves the right at any time to change or amend the terms of the Program, to make no Awards under the Program or to cancel or terminate the Program.
- The Administrators may at any time vary the terms of the Program for one or more Employees to the extent they determine, in their discretion, that doing so is necessary or advisable (1) to comply with applicable laws, rules, regulations or guidance, including the laws of any non-U.S. jurisdiction, (2) to facilitate the administration of the Program or (3) for other reasons.

Administrator:

- The Administrators shall have complete discretionary authority to interpret the Program and to decide all matters under the Program. Such interpretation and decision shall be final, conclusive and binding on all individuals, in the absence of clear and convincing evidence that the Administrator acted arbitrarily and capriciously. However, no individual acting, directly or by delegation, as the Administrator may determine his or her own rights or entitlements under the Program. The Administrator shall establish such rules and procedures, maintain such records and prepare such reports as it considers, in its discretion, necessary or appropriate to carry out the purposes of the Program. The Administrator may, in its discretion, delegate to such employees or other persons as it determines such of its duties or responsibilities as it deems appropriate.
- The Administrators may engage counsel and such clerical, financial, investment, accounting and other specialized services, whether internal or external to State Street, as the Administrators may deem necessary or appropriate in the administration of the Program. The Administrators shall be entitled to rely upon any opinions, reports, or other advice furnished by such counsel or other specialist engaged for that purpose and, in so relying, shall be fully protected in any action, determination, or omission made in good faith.
- To the extent permitted by law and not prohibited by its charter and by-laws, State Street will indemnify and hold harmless every person serving (directly or by delegation) as Administrator and the estate of such an individual if he or she is deceased from and against all claims, loss, damages, liability and reasonable costs and expenses incurred in carrying out his or her responsibilities as Administrator, unless due to the gross negligence, bad faith or willful misconduct of such individual; provided, that counsel fees and amounts paid in settlement must be approved by State Street; and further provided, that this paragraph will not apply to any claims, loss, damages, liability or costs

and expenses which are covered by a liability insurance policy maintained by State Street or by the individual. The provisions of the preceding sentence shall not apply to any corporate trustee, insurance company, investment manager or outside service provider (or to any employee of any of the foregoing) unless State Street otherwise specifies in writing.

Eligibility and Participation:

- The Administrators, in their discretion, determine Employee eligibility under the Program for each Performance Period.
- Employees who participate in (1) another State Street annual incentive or bonus plan or (2) a business-funded incentive plan are not eligible to receive an Award under the Program. For these purposes, the State Street Cash Award Plan, Supplemental Cash Incentive Plan, 2017 Stock Incentive Plan and the SSGA Long Term Incentive Plan, and their successor plans, are neither another annual incentive or bonus plan nor a business-funded incentive plan.
- Employees on leave (paid and/or unpaid) for the entire Performance Period are not eligible to receive an Award under the Program.
- Employees hired late in the Performance Period, typically on or after October 1st, or an alternate date chosen by the Administrators, are not eligible to receive an Award under the Program.

Award Conditions:

- The Program covers Awards for the Performance Period.
- Awards under the Program are discretionary, and service or performance during all or a portion of the Performance Period does not guarantee or entitle an Employee to an Award or any other rights under the Program.
- Neither the Program nor any action taken hereunder will be construed as (1) giving any Employee or other person the right to continue in the employ or service of any Employer, (2) interfering in any way with the right of State Street to terminate any individual's employment (or to demote or to exclude any individual from future Awards under the Program) at any time for any reason or (3) giving any individual any claim or right to be granted any Award under the Program or to be treated uniformly with other's under the Program. Except as specifically provided by the Administrators, State Street shall not be liable for the loss of any actual or potential payments related to an Award in the event of the termination of employment of any individual. The Program will not confer on any person other than State Street and any Award recipient any rights or remedies thereunder, except as expressly provided in the Program.
- Except as required by law, no Award hereunder, or interest in, the Program shall be subject in any manner to anticipation, alienation, sale, transfer, assignment, pledge, encumbrance, or charge, and any attempt to do so shall be void. All Awards made pursuant to the Program are in consideration of services performed or to be performed for the Employers.
- All Awards shall be funded from the general assets of State Street. The Program is intended to constitute an "unfunded" plan for award compensation. Nothing contained herein shall give any Award recipient any rights that are greater than those of a general creditor of State Street.
- The Program is intended to be an award program which is not subject to the Employee Retirement Income Security Act of 1974, as amended.
- If an Employee is a registered lobbyist, his/her Award will not be based, even in part, upon the outcome of any legislative, administrative, government or other official action.

- Awards made under the Program are subject to any forfeiture, compensation recovery or similar requirements under applicable law and related implementing regulations and guidance and to other forfeiture, compensation recovery or similar requirements under plans, policies and practices of State Street in effect from time to time. In the event that under any applicable law or related implementing regulations, or guidance, or pursuant to any State Street plans, policies or practices, State Street is required or permitted to reduce or cancel any amount remaining to be paid, or to recover any amount previously paid, with respect to an Award, it shall, in its discretion, be authorized to do so.
- The Program shall be construed, regulated and administered in accordance with the laws of the Commonwealth of Massachusetts and applicable federal laws.
- Eligibility for an Award shall be subject to any special terms and conditions for the Employee's country of residence (and country of employment, if different), as determined by the Administrators in their discretion. The Administrators reserve the right to impose other requirements on participation in the Program, to the extent the Administrators, in their discretion, determine that such other requirements are necessary or advisable in order to comply with local law.
- To the extent a court or tribunal of competent jurisdiction determines that any provision of the Program is invalid or unenforceable, in whole or in part, the Administrators, in their discretion, shall have the power and authority to revise or strike such provision to the extent determined, in their discretion, necessary to make it and the other provisions of the Program valid and enforceable to the full extent permitted under local law.

Award Procedures:

- Awards will be paid by the later of (1) 60 days following the HRC Approval Date or (2) the end of the calendar year in which the HRC Approval Date occurs.
- Awards may be pro-rated for Employees based on length of service during the Performance Period.
- Awards may be made in immediate cash, deferred cash or equity vehicles, and under such of State Street's plans or programs, as determined by the Administrators in their discretion and consistent with the terms of such vehicles, plans and programs, including without limitation, the State Street Cash Award Plan, Supplemental Cash Incentive Plan, 2017 Stock Incentive Plan and the SSGA Long Term Incentive Plan, and their successor plans.
- All payments are subject to applicable withholding for country, state and local tax requirements and social security contributions. Withholding will be made in accordance with such procedures and standards as the Administrators may establish in their discretion.
- Awards made under the Program are intended to comply with or be exempt from Section 409A of the U.S. Internal Revenue Code and shall be interpreted and administered accordingly.

Term:

- The Program shall continue in effect until terminated by State Street.

Defined Terms:

"Administrator" or "Administrators" means (1) the HRC with respect to all Employees who have been designated as officers of State Street for purposes of Section 16 of the Securities Exchange Act of 1934, as amended, and (2) jointly or severally the most senior Global Human Resources officer (as of the date

of this document, the Executive Vice President-Chief Human Resources and Citizenship Officer) as from time to time in office and his or her delegates and the most senior Global Total Rewards Officer (as of the date of this document, the Senior Vice President-Head of Global Total Rewards), with respect to all other persons.

"Award" means any incentive award made by Administrators, in their discretion, in accordance with the terms of the Program.

"HRC" means the Human Resources Committee (including any subcommittee thereof) of the State Street Board of Directors.

"HRC *Approval Date*" means the date of the meeting of the HRC at which the HRC approves the final total funded incentive compensation pool(s) with respect to the applicable Performance Period.

"Employee" means (1) any employee of an Employer (including an officer or director who is also an employee) who is employed and in good standing on the HRC Approval Date and (2) any individual (a) who is no longer an employee of an Employer due to retirement, death, disability or otherwise and (b) who the Administrator determines, in its discretion, is eligible to receive an Award earned while in the employment of an Employer. Employee does not include individuals who are employed on a temporary or fixed term basis, employed by a joint venture, or providing services as a contractor or through a third party employer.

"Employer" means any or all, as the context requires in order to refer to the employing entity of an Employee, of State Street and any other entity (or branch) that would be treated as a member of the same controlled group of corporations, as trades or businesses under common control, with State Street, under Internal Revenue Code sections 414(b) and (c).

"Performance Period" means State Street's fiscal year or any other period selected by the Administrators.

"Program" means the State Street Corporation Incentive Compensation Program.

"State Street" means State Street Corporation.

IN WITNESS WHEREOF, State Street has caused this instrument to be executed by its duly authorized officer on the 16th day of December, 2022.

STATE STREET CORPORATION

By: /s/ Kathryn M. Horgan

Exhibit 21

SUBSIDIARIES OF STATE STREET CORPORATION

The following table presents the name of certain State Street subsidiaries and the state or jurisdiction of organization. Certain subsidiaries of State Street have been omitted in accordance with SEC regulations because, when considered in the aggregate, they did not constitute a “significant subsidiary” of State Street.

Antrim Corporation	Delaware
Charles River Systems, Inc	Massachusetts
Currenex, Inc	Delaware
FX Connect, LLC	Delaware
International Fund Services (N.A.) LLC	Delaware
Investors Copley Securities Corporation	Massachusetts
Offshore Financial Solutions LTD	Grand Cayman
Pebble Securities Corporation	Massachusetts
Quincy Securities Corporation	Massachusetts
Sail Trust	Grand Cayman
SSB Realty, LLC	Delaware
State Street Australia Limited	Australia
State Street Bank and Trust Company	Massachusetts
State Street Bank International GmbH	Germany
State Street Europe Holdings Germany S.À R.L. & Co KG	Germany
State Street Fund Services (Ireland) Limited	Ireland
State Street Global Advisors, Inc	Delaware
State Street Global Advisors International Holdings Inc	Delaware
State Street Global Advisors Limited	United Kingdom
State Street Global Advisors Trust Company	Massachusetts
State Street Global Markets LLC	Delaware
State Street Holdings Germany GmbH	Germany
State Street Intermediate Funding LLC	Delaware
State Street International Holdings	Massachusetts
State Street International Holdings Switzerland GmbH	Switzerland
State Street Public Lending Corporation	Massachusetts

Exhibit 23

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements, as listed below, of State Street Corporation and in the related Prospectuses, where applicable, of our reports dated February 16, 2023, with respect to the consolidated financial statements of State Street Corporation and the effectiveness of internal control over financial reporting of State Street Corporation, included in this Annual Report (Form 10-K) for the year ended December 31, 2022:

Form	Registration Statement No.	Description
Form S-3	333-265877	Debt Securities, Preferred Stock, Depositary Shares, Common Stock, Purchase Contracts, Units and Warrants
Form S-4	333-248707	Fixed-to-Floating Rate Senior Note Exchanges
Form S-8	333-100001	2002 Savings-Related Stock Plan
Form S-8	333-99989	1997 Equity Incentive Plan
Form S-8	333-46678	1997 Equity Incentive Plan
Form S-8	333-36793	1997 Equity Incentive Plan
Form S-8	333-36409	1997 Equity Incentive Plan
Form S-8	333-135696	2006 Equity Incentive Plan
Form S-8	333-160171	2006 Equity Incentive Plan
Form S-8	333-183656	2006 Equity Incentive Plan
Form S-8	333-218048	2017 Stock Incentive Plan
Form S-8	333-233874	2017 Stock Incentive Plan

/s/ Ernst & Young LLP

Boston, Massachusetts
February 16, 2023

EXHIBIT 31.1

RULE 13a-14(a)/15d-14(a) CERTIFICATION

I, Ronald P. O'Hanley, certify that:

1. I have reviewed this Annual Report on Form 10-K of State Street 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 16, 2023

By: /s/ RONALD P. O'HANLEY

Ronald P. O'Hanley,
Chairman and Chief Executive Officer

EXHIBIT 31.2

RULE 13a-14(a)/15d-14(a) CERTIFICATION

I, Eric W. Aboaf, certify that:

1. I have reviewed this Annual Report on Form 10-K of State Street 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 16, 2023

By: /s/ ERIC W. ABOAF

Eric W. Aboaf,

Vice Chairman and Chief Financial Officer

EXHIBIT 32

SECTION 1350 CERTIFICATIONS

To my knowledge, this Annual Report on Form 10-K for the period ended December 31, 2022 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in this Report fairly presents, in all material respects, the financial condition and results of operations of State Street Corporation.

Date: February 16, 2023 By: /s/ RONALD P. O'HANLEY
Ronald P. O'Hanley,
Chairman and Chief Executive Officer

Date: February 16, 2023 By: /s/ ERIC W. ABOAF
Eric W. Aboaf,
Vice Chairman and Chief Financial Officer