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

FORM 10-K

☒ Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the Fiscal Year Ended December 31, 2022
or
☐ Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Commission File Number 001-35651

THE BANK OF NEW YORK MELLON CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**13-2614959**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

240 Greenwich Street
New York, New York 10286
(Address of principal executive offices) (Zip Code)
Registrant's telephone number, including area code – (212) 495-1784

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, $0.01 par value	BK	New York Stock Exchange
6.244% Fixed-to-Floating Rate Normal Preferred Capital Securities of Mellon Capital IV (fully and unconditionally guaranteed by The Bank of New York Mellon Corporation)	BK/P	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). Yes ☐ No ☒

As of June 30, 2022, the aggregate market value of the registrant's common stock, $0.01 par value per share, held by non-affiliates of the registrant was $33,679,182,544.

As of January 31, 2023, 804,200,938 shares of the registrant's common stock, $0.01 par value per share, were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the following documents are incorporated by reference in the following parts of this Form 10-K:

The Bank of New York Mellon Corporation 2023 Proxy Statement – Part III

The Bank of New York Mellon Corporation 2022 Annual Report to Shareholders – Parts I, II and IV

Available Information

This Form 10-K filed by The Bank of New York Mellon Corporation ("BNY Mellon" or the "Company") with the Securities and Exchange Commission (the "SEC") contains the Exhibits listed on the Index to Exhibits beginning on page 15, including those portions of BNY Mellon's 2022 Annual Report to Shareholders (the "Annual Report") which are incorporated herein by reference. The Annual Report and BNY Mellon's Proxy Statement for its 2023 Annual Meeting (the "Proxy") will be available on our website at www.bnymellon.com. We also make available on our website, free of charge, the following materials:

- All of our SEC filings, including annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to these reports as soon as reasonably practicable after we electronically file such materials with, or furnish them to, the SEC pursuant to Section 13(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and any proxy statement mailed by us in connection with the solicitation of proxies;
- Our earnings materials and selected management conference calls and presentations;
- Other regulatory disclosures, including: Pillar 3 Disclosures (and Market Risk Disclosure contained therein); Liquidity Coverage Ratio Disclosures; Federal Financial Institutions Examination Council – Consolidated Reports of Condition and Income for a Bank with Domestic and Foreign Offices; Consolidated Financial Statements for Bank Holding Companies; and the Dodd-Frank Act Stress Test Results for BNY Mellon and The Bank of New York Mellon; and
- Our Corporate Governance Guidelines, Amended and Restated By-laws, Directors' Code of Conduct and the Charters of the Audit, Finance, Corporate Governance, Nominating and Social Responsibility, Human Resources and Compensation, Risk and Technology Committees of our Board of Directors.

The contents of BNY Mellon's website or any other websites referenced herein or in the Annual Report are not part of or incorporated by reference into this Form 10-K.

Forward-looking Statements

In this Form 10-K, and other public disclosures of BNY Mellon, words, such as "estimate," "forecast," "project," "anticipate," "likely," "target," "expect," "intend," "continue," "seek," "believe," "plan," "goal," "could," "should," "would," "may," "might," "will," "strategy," "synergies," "opportunities," "trends," "ambition," "objective," "aim," "future," "potentially," "outlook" and words of similar meaning, may signify forward-looking statements. Some statements in this document are forward-looking. These include statements about the usefulness of Non-GAAP measures, the future results of BNY Mellon, our businesses, financial, liquidity and capital condition, results of operations, liquidity, risk and capital management and processes, goals, strategies, outlook, objectives, expectations (including those regarding our performance results, expenses, nonperforming assets, products, impacts of currency fluctuations, impacts of securities portfolio repositioning, impacts of trends on our businesses, regulatory, technology, market, economic or accounting developments and the impacts of such developments on our businesses, legal proceedings and other contingencies), human capital management (including related ambitions, objectives, aims and goals), effective tax rate, net interest revenue, estimates (including those regarding expenses, losses inherent in our credit portfolios and capital ratios), intentions (including those regarding our capital returns and expenses, including our investments in technology and pension expense), targets, opportunities, potential actions, growth and initiatives, including the potential effects of the coronavirus pandemic on any of the foregoing.

These forward-looking statements, and other forward-looking statements contained in other public disclosures of BNY Mellon (including those incorporated into this Form 10-K), are based on assumptions that involve risks and uncertainties and that are subject to change based on various important factors (some of which are beyond BNY Mellon's control), including those factors described in the Annual Report under "Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") – Risk Factors." Actual results may differ materially from those expressed or implied as a result of a number of factors, including those discussed in the "Risk Factors" section of our Annual Report, such as:

- errors or delays in our operational and transaction processing, or those of third parties, may materially adversely affect our business, financial condition, results of operations and reputation;
- our risk management framework, models and processes may not be effective in identifying or mitigating risk and reducing the potential for losses;
- our business may be adversely affected if we are unable to attract, retain, develop and motivate employees;
- a communications or technology disruption or failure within our infrastructure or the infrastructure of third parties that results in a loss of information, delays our ability to access information or impacts our ability to provide services to our clients may materially adversely affect our business, financial condition and results of operations;
- a cybersecurity incident, or a failure in our computer systems, networks and information, or those of third parties, could result in the theft, loss, unauthorized access to, disclosure, use or alteration of information, system or network failures, or loss of access to information. Any such incident or failure could adversely impact our ability to conduct our businesses, damage our reputation and cause losses;
- we are subject to extensive government rulemaking, policies, regulation and supervision that impact our operations. Changes to and introduction of new rules and regulations have compelled, and in the future may compel, us to change how we manage our businesses, which could have a material adverse effect on our business, financial condition and results of operations;
- regulatory or enforcement actions or litigation could materially adversely affect our results of operations or harm our businesses or reputation;
- a failure or circumvention of our controls and procedures could have a material adverse effect on our business, financial condition, results of operations and reputation;
- we are dependent on fee-based business for a substantial majority of our revenue and our fee-based revenues could be adversely affected by slowing in market activity, weak financial markets, underperformance and/or negative trends in savings rates or in investment preferences;
- weakness and volatility in financial markets and the economy generally may materially adversely affect our business, financial condition and results of operations;
- levels of and changes in interest rates have impacted, and will in the future continue to impact, our profitability and capital levels, at times adversely;
- we have experienced, and may continue to experience, unrealized or realized losses on securities related to volatile and illiquid market conditions, reducing our capital levels and/or earnings;
- transitions away from and the replacement of LIBOR and other IBORs could adversely impact our business, financial condition and results of operations;
- the failure or perceived weakness of any of our significant clients or counterparties, many of whom are major financial institutions or sovereign entities, and our assumption of credit, counterparty and concentration risk, could expose us to loss and adversely affect our business;
- we could incur losses if our allowance for credit losses, including loan and lending-related commitment reserves, is inadequate or if our expectations of future economic conditions deteriorate;
- our business, financial condition and results of operations could be adversely affected if we do not effectively manage our liquidity;
- failure to satisfy regulatory standards, including “well capitalized” and “well managed” status or capital adequacy and liquidity rules more generally, could result in limitations on our activities and adversely affect our business and financial condition;
- the Parent is a non-operating holding company and, as a result, is dependent on dividends from its subsidiaries and extensions of credit from its IHC to meet its obligations, including with respect to its securities, and to provide funds for share repurchases and payment of dividends to its stockholders;
- our ability to return capital to shareholders is subject to the discretion of our Board of Directors and may be limited by U.S. banking laws and regulations, including those governing capital and capital planning, applicable provisions of Delaware law and our failure to pay full and timely dividends on our preferred stock;

- any material reduction in our credit ratings or the credit ratings of our principal bank subsidiaries, The Bank of New York Mellon or BNY Mellon, N.A., could increase the cost of funding and borrowing to us and our rated subsidiaries and have a material adverse effect on our business, financial condition and results of operations and on the value of the securities we issue;
- the application of our Title I preferred resolution strategy or resolution under the Title II orderly liquidation authority could adversely affect the Parent's liquidity and financial condition and the Parent's security holders;
- new lines of business, new products and services or transformational or strategic project initiatives subject us to new or additional risks, and the failure to implement these initiatives could affect our results of operations;
- we are subject to competition in all aspects of our business, which could negatively affect our ability to maintain or increase our profitability;
- our strategic transactions present risks and uncertainties and could have an adverse effect on our business, financial condition and results of operations;
- our businesses may be negatively affected by adverse events, publicity, government scrutiny or other reputational harm;
- climate change concerns could adversely affect our business, affect client activity levels and damage our reputation;
- impacts from natural disasters, climate change, acts of terrorism, pandemics, global conflicts and other geopolitical events may have a negative impact on our business and operations;
- tax law changes or challenges to our tax positions with respect to historical transactions may adversely affect our net income, effective tax rate and our overall results of operations and financial condition; and
- changes in accounting standards governing the preparation of our financial statements and future events could have a material impact on our reported financial condition, results of operations, cash flows and other financial data.

Investors should consider all risk factors discussed in the Annual Report and any subsequent reports filed with the SEC by BNY Mellon pursuant to the Exchange Act. All forward-looking statements speak only as of the date on which such statements are made, and BNY Mellon undertakes no obligation to update any statement to reflect events or circumstances after the date on which such forward-looking statement is made or to reflect the occurrence of unanticipated events.

THE BANK OF NEW YORK MELLON CORPORATION

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ITEM 1. BUSINESS

Description of Business

The Bank of New York Mellon Corporation, a Delaware corporation (NYSE symbol: BK), is a global company headquartered in New York, New York, with $44.3 trillion in assets under custody and/or administration and $1.8 trillion in assets under management as of Dec. 31, 2022. With its subsidiaries, BNY Mellon has been in business since 1784.

We divide our businesses into three principal business segments: Securities Services, Market and Wealth Services and Investment and Wealth Management. We also have an Other segment, which includes the leasing portfolio, corporate treasury activities (including our securities portfolio), derivatives and other trading activity, corporate and bank-owned life insurance, renewable energy and other corporate investments and certain business exits.

For a further discussion of BNY Mellon's lines of business, products and services, see the "Overview," "Summary of financial highlights," "Fee and other revenue," "Review of business segments" and "International operations" sections in the MD&A section in the Annual Report and Notes 24 and 25 of the Notes to Consolidated Financial Statements in the Annual Report, of which portions are incorporated herein by reference. See the "Available Information" section on page 1 of this Form 10-K, which is incorporated herein by reference, for a description of how to access financial and other information regarding BNY Mellon.

Our two principal U.S. banking subsidiaries engage in trust and custody activities, investment management services, banking services and various securities-related activities. Our two principal U.S. banking subsidiaries are:

- The Bank of New York Mellon, a New York state-chartered bank, which houses our Securities Services businesses, including Asset Servicing and Issuer Services and certain Market and Wealth Services businesses, including Treasury Services and Clearance and Collateral Management, as well as the bank-advised business of Investment Management; and
- BNY Mellon, National Association ("BNY Mellon, N.A."), a national bank, which houses our Wealth Management business and certain activities of our Pershing businesses.

We have four other U.S. bank and/or trust company subsidiaries concentrating on trust products and services across the United States: The Bank of New York Mellon Trust Company, National Association, BNY Mellon Trust of Delaware, BNY Mellon Investment Servicing Trust Company and BNY Mellon Trust Company of Illinois. Most of our Investment Management business and Pershing businesses are direct or indirect non-bank subsidiaries of BNY Mellon.

Each of our bank and trust company subsidiaries is subject to regulation by the applicable bank regulatory authority. The deposits of our U.S. banking subsidiaries are insured by the Federal Deposit Insurance Corporation to the extent provided by law.

BNY Mellon's banking subsidiaries outside the United States are subject to regulation by non-U.S. regulatory authorities in addition to the Board of Governors of the Federal Reserve System (the "Federal Reserve"). The Bank of New York Mellon SA/NV ("BNY Mellon SA/NV") is the main banking subsidiary of The Bank of New York Mellon in continental Europe. It is authorized and regulated as a credit institution by the European Central Bank and the National Bank of Belgium under the Single Supervisory Mechanism and is also supervised by the Belgian Financial Services and Markets Authority for conduct of business rules. BNY Mellon SA/NV has its principal office in Brussels and branches in Amsterdam, the Netherlands; Copenhagen, Denmark; Dublin, Ireland; Frankfurt, Germany; the City of Luxembourg, Luxembourg; Madrid, Spain; Milan, Italy; and Paris, France. BNY Mellon SA/NV's activities are in the Securities Services and Market and Wealth Services segments of BNY Mellon with a focus on global custody, asset servicing and collateral management. For additional discussion, see the "MD&A – Supervision and Regulation" section in the Annual Report.

Primary Subsidiaries

Exhibit 21.1 to this Form 10-K presents a list of BNY Mellon's primary subsidiaries as of Dec. 31, 2022.

Human Capital Management

Our enduring ambition is to build the best global team—one that is inclusive of varying perspectives, backgrounds and experiences, and represents the increasingly varied markets and clients we serve. Our core objective is to empower our teams to do their best work, make unique contributions and build purposeful careers in an equitable environment where they are treated with fairness, dignity and respect.

Diversity, Equity and Inclusion

Diversity, equity and inclusion is integral to who we are as a company, what our people experience as members of our global team, and how we serve all of our stakeholders. Our diversity, equity and inclusion strategy is not separate, but embedded in our business strategy, operating model, talent experience and client value proposition.

To increase the diversity of our talent pool, we work with professional associations, educational institutions, think tanks and nonprofits to deepen engagement with Black, Hispanic/Latino, Asian, LGBT+, neuro-diverse individuals, people with disabilities, and talent from other underrepresented backgrounds. We aim for fair inclusion by using diverse candidate slates, creating gender-neutral job descriptions and involving diverse interview panels. We embed diversity, equity and inclusion in our talent review processes, succession plans and development objectives to improve promotion readiness and advance and retain talent from all backgrounds.

At the most senior level, our Executive Committee sets diversity, equity and inclusion goals with specific targets to improve senior leader diversity and to increase female representation globally and diverse ethnic and/or racial representation in the U.S. Executive Committee members' variable compensation is informed by performance against these goals.

At the end of 2022, women were 40% of BNY Mellon's global workforce and 43% of BNY Mellon's U.S. workforce. Further, 38% of BNY Mellon's U.S. workforce were from U.S. underrepresented ethnic and/or racial backgrounds.

At the end of 2022, 35% of BNY Mellon's Executive Committee were women and 20% of BNY Mellon's Executive Committee were from underrepresented ethnic and/or racial backgrounds.

Our Board of Directors is committed to fostering and maintaining its diversity. At the end of 2022, 36% of our Board of Directors were women and 36% of our Board of Directors was composed of individuals from underrepresented ethnic and/or racial backgrounds. In addition, four of BNY Mellon's six standing committees of its Board of Directors are chaired by a diverse director based on race or gender.

Retention, Training and Development

We seek to attract and retain employees by providing a rewarding employee experience. We recognize that employees seek a supportive, safe and inclusive workplace, and we continually evaluate our employee engagement and wellbeing programs in an effort to meet those expectations. We offer a 401(k) plan for U.S. employees, and other defined contribution retirement plans worldwide, where consistent with market practice. We also maintain defined benefit plans for certain current and former employees, some of which are frozen (including in the U.S.). At Dec. 31, 2022, we had approximately 43,700 participants in our 401(k) plan, including former employees. In addition, our frozen U.S. defined benefit pension plan covered approximately 8,100 U.S. participants and our non-U.S. defined benefit plans (some frozen) covered approximately 15,700 non-U.S. participants.

In December 2022, BNY Mellon announced that it would provide eligible employees an award of 10 restricted stock units ("RSUs") on Feb. 13, 2023. This equity grant will allow eligible employees to become equity owners and share in the Company's success.

At key career transition points, from internship to executive management, we offer programs and development opportunities to help employees advance their careers and progress within our organization. Our extensive training and development opportunities are designed to enable employees to grow professionally and advance within our organization.

We engage with employees to encourage innovation, show appreciation for their contributions, and gather feedback on how we can build a more rewarding, inclusive workplace. For example, we regularly gather feedback through an all-employee survey.

Employee Wellbeing, Health and Safety

BNY Mellon's holistic approach to employee wellbeing is designed to create a healthy, resilient and vibrant workforce. Our programs are designed to provide employees easy access to resources to help improve their physical health, emotional resilience, financial wellbeing and social connections. Further, we work to ensure the safety of our employees and clients in all of our facilities.

During the coronavirus pandemic, we quickly transitioned the vast majority of our employees to working from home. We found new ways of working and collaborating to deliver on our commitments to clients and each other. Beginning in 2022, we transitioned to a new model which fosters flexibility. We endeavor to promote a collaborative and effective workplace for our people, while continuing to embrace the concept of flexibility and enhancing our culture and commercial impact.

Employees and International Operations

Globally, at Dec. 31, 2022, BNY Mellon and its subsidiaries had approximately 51,700 full-time employees.

We pride ourselves on providing dedicated service through our multilingual sales, marketing and client service teams. At Dec. 31, 2022, approximately 50% of our total employees (full-time and part-time employees) were based outside the U.S., with approximately 10,600 employees in Europe, the Middle East and Africa ("EMEA"), approximately 16,100 employees in the Asia-Pacific region ("APAC") and approximately 900 employees in other global locations, primarily Brazil.

Supervision and Regulation

Information on the supervision and regulation of BNY Mellon can be found in the "MD&A – Supervision and Regulation" section in the Annual Report, which is incorporated herein by reference.

Competition

BNY Mellon is subject to competition in all aspects and areas of our business. Our Securities Services and Market and Wealth Services businesses compete with domestic and international financial services firms that offer custody services, corporate trust services, clearing services, collateral management services, credit services, securities brokerage, foreign exchange services, derivatives, depositary receipt services and integrated cash management solutions and related products, as well as a wide range of technology service providers, such as financial services data processing firms. Our Investment and Wealth Management business competes with domestic and international investment management and wealth management firms, hedge funds, investment banking companies and other financial services companies, including trust banks, brokerage firms and insurance companies, as well as a wide range of technology service providers.

Competition in the financial services industry continues to be intense. Competition is based on a number of factors including, among others, customer service and convenience, transaction execution, capital or access to capital, quality and range of products and services offered, performance, technological innovation and expertise, price, reputation and lending limits. Competition also varies based on the types of clients, customers, industries and geographies served. Our ability to continue to compete effectively also depends in large part on our ability to attract new employees and retain and motivate our existing employees, while managing compensation and other costs. Our competitive position may be affected by institutions that are not similarly subject to extensive regulation, and as further technological advances enable more companies to provide financial services.

For additional discussion regarding competition, see "MD&A – Risk Factors – Strategic Risk – We are subject to competition in all aspects of our business, which could negatively affect our ability to maintain or increase our profitability" and "MD&A – Risk Factors – Operational Risk – Our business may be adversely affected if we are unable to attract, retain and motivate employees" in the Annual Report, which are incorporated herein by reference.

ITEM 1A. RISK FACTORS

The information required by this Item is set forth in the Annual Report under "MD&A – Risk Factors," which portion is incorporated herein by reference.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our corporate headquarters, located at 240 Greenwich Street in New York City, is a 23-story building of approximately 1.2 million square feet that we own.

We have additional offices and commercial space in the U.S. and elsewhere in the Americas, primarily Brazil and Canada, which together consist of approximately 5.7 million square feet of leased and owned space.

In the EMEA region, we have offices that total approximately 1.1 million square feet of leased and owned space and we have 1.5 million square feet of leased space in the APAC region.

Our global facilities are used across our business segments for corporate purposes. In the preceding paragraphs, square footage figures do not include excess space that has been subleased to third parties. We regularly evaluate our space capacity in relation to current and projected needs. We have incurred and may in the future incur costs if we reduce our space capacity or commit to, or occupy, new properties in locations in which we operate and dispose of existing space. These costs may be material to our operating results in a given period.

ITEM 3. LEGAL PROCEEDINGS

The information required by this Item is set forth in the “Legal proceedings” section in Note 22 of the Notes to Consolidated Financial Statements in the Annual Report, which portion is incorporated herein by reference.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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

Our common stock is listed on the New York Stock Exchange under the ticker symbol BK. As of Jan. 31, 2023, there were 22,256 holders of record of our common stock.

Additional information about our common stock, including additional information about share repurchases and existing Board of Directors authorizations with respect to purchases by us of our common stock and other equity securities is provided in the "Capital – Issuer purchases of equity securities" section in the MD&A in the Annual Report and Note 15 of the Notes to Consolidated Financial Statements in the Annual Report, which portions are incorporated herein by reference. Share repurchases may be executed through open market repurchases, in privately negotiated transactions or by other means, including through repurchase plans designed to comply with Rule 10b5-1 and other derivative, accelerated share repurchase and other structured transactions.

ITEM 6. [RESERVED]

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

The information required by this Item is set forth in the MD&A and Notes 3, 6, 12, 14, 19, 22 and 23 of the Notes to Consolidated Financial Statements in the Annual Report, which portions are incorporated herein by reference.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The information required by this Item is set forth in the "Trading activities and risk management," "Asset/liability management" and "Risk Management" sections in the MD&A in the Annual Report and "Derivative financial instruments" under Note 1 and Notes 20 and 23 of the Notes to Consolidated Financial Statements in the Annual Report, which portions are incorporated herein by reference.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Reference is made to Item 15 on page 14 hereof for a detailed listing of the items under Exhibits and Financial Statements, which are incorporated herein by reference.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management, including the Chief Executive Officer and Chief Financial Officer, with participation by the members of the Disclosure Committee, has responsibility for ensuring that there is an adequate and effective process for establishing, maintaining, and evaluating disclosure controls and procedures that are designed to ensure that information required to be disclosed by us in our SEC reports is timely recorded, processed, summarized and reported and that information required to be disclosed by BNY Mellon is accumulated and communicated to BNY Mellon's management to allow timely decisions regarding the required disclosure. In addition, our ethics hotline can be used by employees and others for the anonymous communication of concerns about financial controls or reporting matters. There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, even effective disclosure controls and procedures can only provide reasonable assurance of achieving their control objectives.

As of Dec. 31, 2022, an evaluation was carried out under the supervision and with the participation of our management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and procedures as defined in Rule 13a-15(e) of the Exchange Act. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective.

Changes in Internal Control over Financial Reporting

In the ordinary course of business, we may routinely modify, upgrade or enhance our internal controls and procedures for financial reporting. There have not been any changes in our internal control over financial reporting as defined in Rule 13a-15(f) of the Exchange Act during the fourth quarter of 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management Report on Internal Control over Financial Reporting and Report of Independent Registered Public Accounting Firm

See “Report of Management on Internal Control Over Financial Reporting” and “Report of Independent Registered Public Accounting Firm” on pages 113 and 114 of the Annual Report, each of which is incorporated herein by reference.

ITEM 9B. OTHER INFORMATION

Not applicable.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item is included below and in the Proxy in the following sections: "Delinquent Section 16(a) Reports" under the heading "Additional Information – Information on Stock Ownership;" "Background" under the heading "Item 1 – Election of Directors – Resolution;" "Nominees" under the heading "Item 1 – Election of Directors;" and "Board Meetings and Committee Information – Committees and Committee Charters" and "– Audit Committee" under the heading "Item 1 – Election of Directors – Corporate Governance and Board Information," which are incorporated herein by reference.

CODE OF ETHICS

We have adopted a code of ethics for our employees which we refer to as our Code of Conduct. The Code of Conduct applies to all employees of BNY Mellon or an entity that is more than 50% owned by us, including our Chief Executive Officer (principal executive officer), Chief Financial Officer (principal financial officer) and Controller (principal accounting officer). The Code of Conduct is posted on our website at https://www.bnymellon.com/content/dam/bnymellon/documents/pdf/csr/employee-code-of-conduct.pdf. We also have a code of ethics for our directors, which we refer to as our Directors' Code of Conduct. The Directors' Code of Conduct applies to all directors of BNY Mellon. The Directors' Code of Conduct is posted on our website at https://www.bnymellon.com/content/dam/bnymellon/documents/pdf/investor-relations/directors-code-of-conduct.pdf. We intend to disclose on our website any amendments to or waivers of (i) the Code of Conduct relating to executive officers (including the officers specified below) and (ii) the Directors' Code of Conduct relating to our directors.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

The position of Chief Executive Officer is held for the year for which the Board of Directors was elected and until the appointment and qualification of a successor or until earlier death, resignation, disqualification or removal. All other executive officers serve at the pleasure of the appointing authority. No executive officer has a family relationship to any other executive officer or director.

Name	Age	Positions and offices
Jolen Anderson	44	Ms. Anderson has served as Senior Executive Vice President and Global Head of Human Resources of BNY Mellon since September 2019. From 2014 to September 2019, Ms. Anderson served as Senior Vice President, Chief Diversity Officer and Chief Counsel, Employment and Social Responsibility, for Visa Inc.
Bridget E. Engle	59	Ms. Engle has served as Senior Executive Vice President and Head of Operations and Technology of BNY Mellon since August 2020 and served as Senior Executive Vice President and Chief Information Officer from June 2017 to August 2020.
Hani A. Kablawi	54	Mr. Kablawi has served as Senior Executive Vice President and Chairman of International of BNY Mellon since January 2020 and was Senior Executive Vice President and Chairman of EMEA and Chief Executive Officer of Global Asset Servicing from January 2018 to January 2020 and Chief Executive Officer of EMEA Investment Services from July 2016 to January 2018.
Catherine Keating	61	Ms. Keating has served as Senior Executive Vice President and Chief Executive Officer of Wealth Management at BNY Mellon since July 2018. From February 2015 to June 2018, Ms. Keating was the Chief Executive Officer of Commonfund.
Senthil Kumar	57	Mr. Kumar has served as Senior Executive Vice President and Chief Risk Officer of BNY Mellon since July 2019. Mr. Kumar served as Chief Risk Officer of the Institutional Clients Group at Citigroup Inc. from April 2014 to June 2019.
Kurtis R. Kurimsky	49	Mr. Kurimsky has served as Vice President and Controller of BNY Mellon since July 2015.

Name	Age	Positions and offices
J. Kevin McCarthy	58	Mr. McCarthy has served as Senior Executive Vice President and General Counsel of BNY Mellon since April 2014.
Dermot McDonogh	57	Mr. McDonogh has served as Senior Executive Vice President of BNY Mellon since October 2022 and as Chief Financial Officer of BNY Mellon since February 2023. From 2015 to July 2022, Mr. McDonogh served as the chief operating officer of the Europe, Middle East, and Africa region for Goldman Sachs International and as the chief executive officer of Goldman Sachs International Bank.
Emily Portney	51	Ms. Portney has served as Senior Executive Vice President and Chief Executive Officer of Asset Servicing of BNY Mellon since February 2023. Ms. Portney served as Senior Executive Vice President and Chief Financial Officer of BNY Mellon from July 2020 until February 2023. From October 2018 to July 2020, she served as Global Head of Asset Servicing client management, sales and service and Head of the Americas region. Ms. Portney was the Chief Financial Officer of Barclays International from September 2016 to May 2018.
Roman Regelman	51	Mr. Regelman has served as Senior Executive Vice President, Chief Executive Officer of Asset Servicing, Issuer Services and Digital of BNY Mellon since April 2022 and previously served as Chief Executive Officer of Asset Servicing and Head of Digital from January 2020 to April 2022. From September 2018 to January 2020, he served as Senior Executive Vice President and Head of Digital.
Akash Shah	37	Mr. Shah has served as Senior Executive Vice President and Chief Growth Officer at BNY Mellon since July 2021. Mr. Shah served as Senior Executive Vice President and Head of Strategy and Global Client Management from January 2020 until July 2021 and as Senior Executive Vice President and Head of Strategy from July 2018 to December 2019. From 2006 to July 2018, Mr. Shah worked at McKinsey & Company, most recently as a partner and co-head of the Capital Markets & Investment Banking practice.
Hanneke Smits	56	Ms. Smits has served as Senior Executive Vice President and Chief Executive Officer of Investment Management at BNY Mellon since October 2020 and served as the Chief Executive Officer of Newton Investment Management from August 2016 to September 2020.
Robin Vince	51	Mr. Vince has served as President and Chief Executive Officer of BNY Mellon since August 2022, and as President and Chief Executive Officer-Elect from March 2022 until August 2022. Previously, he was Vice Chair and Chief Executive Officer of Global Market Infrastructure at BNY Mellon since October 2020. From 1994 until September 2020, Mr. Vince worked at Goldman Sachs, most recently as Chief Risk Officer and a member of the Management Committee.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item is included in the Proxy in the following sections: “Director Compensation” under the heading “Item 1 – Election of Directors;” “Compensation Discussion & Analysis” and “Executive Compensation Tables and Other Compensation Disclosures” under the heading “Item 2 – Advisory Vote on Compensation;” “Board Meetings and Committee Information – Committees and Committee Charters” and “– Human Resources and Compensation Committee” under the heading “Item 1 – Election of Directors – Corporate Governance and Board Information,” which are incorporated herein by reference. The information incorporated herein by reference to the section “Report of the HRC Committee” under the heading “Item 2 – Advisory Vote on Compensation – Compensation Discussion & Analysis” is deemed furnished hereunder.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this Item is included in the Proxy in the following sections: “Equity Compensation Plans” and “Information on Stock Ownership” under the heading “Additional Information,” which are incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this Item is included in the Proxy in the following sections: “Business Relationships and Related Party Transactions Policy” and “Director Independence” under the heading “Item 1 – Election of Directors – Corporate Governance and Board Information;” and “Board Meetings and Committee Information – Committees and Committee Charters,” “– Audit Committee,” “– Corporate Governance, Nominating and Social Responsibility Committee” and “– Human Resources and Compensation Committee” under the heading “Item 1 – Election of Directors – Corporate Governance and Board Information,” which are incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item is included in the Proxy in the following section: “Item 4 – Ratification of KPMG LLP,” which is incorporated herein by reference. KPMG LLP’s Public Company Accounting Oversight Board (“PCAOB”) firm identification number is 185.

ITEM 15. EXHIBIT AND FINANCIAL STATEMENT SCHEDULES

(a) The financial statements, schedules and exhibits required for this Form 10-K are incorporated by reference as indicated in the following index. Page numbers refer to pages of the Annual Report for Items (1) and (2) Financial Statements and Schedules.

(1)(2) Financial Statements and Schedules	Page No.
Consolidated Income Statement	116-117
Consolidated Comprehensive Income Statement	118
Consolidated Balance Sheet	119
Consolidated Statement of Cash Flows	120
Consolidated Statement of Changes in Equity	121-122
Notes to Consolidated Financial Statements	123-195
Report of Independent Registered Public Accounting Firm	196

(3) Exhibits

See (b) below.

(b) The exhibits listed on the Index to Exhibits on pages 15 through 21 hereof are incorporated by reference or filed or furnished herewith in response to this Item.

(c) Other Financial Data

None.

ITEM 16. FORM 10-K SUMMARY

None.

Pursuant to the rules and regulations of the SEC, BNY Mellon has filed certain agreements as exhibits to this Form 10-K. These agreements may contain representations and warranties by the parties to such agreements. These representations and warranties have been made solely for the benefit of the other party or parties to such agreements and (i) may have been qualified by disclosures made to such other party or parties, (ii) were made only as of the date of such agreements or such other date(s) as may be specified in such agreements and are subject to more recent developments, which may not be fully reflected in BNY Mellon's public disclosure, (iii) may reflect the allocation of risk among the parties to such agreements and (iv) may apply materiality standards that are different from what may be viewed as material to investors. Accordingly, these representations and warranties may not describe BNY Mellon's actual state of affairs at the date hereof and should not be relied upon.

Exhibit	Description	Method of Filing
3.1	Restated Certificate of Incorporation of The Bank of New York Mellon Corporation.	Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 000-52710) as filed with the Commission on July 2, 2007, and incorporated herein by reference.
3.2	Certificate of Amendment to The Bank of New York Mellon Corporation's Restated Certificate of Incorporation, as filed with the Secretary of State of the State of Delaware on April 9, 2019.	Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-35651) as filed with the Commission on April 10, 2019, and incorporated herein by reference.
3.3	Certificate of Designations of The Bank of New York Mellon Corporation with respect to the Series A Noncumulative Preferred Stock, dated June 15, 2007.	Previously filed as Exhibit 4.1 to the Company's Current Report on Form 8-K (File No. 000-52710) as filed with the Commission on July 5, 2007, and incorporated herein by reference.
3.4	Certificate of Designations of The Bank of New York Mellon Corporation with respect to the Series D Noncumulative Perpetual Preferred Stock, dated May 16, 2013.	Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-35651) as filed with the Commission on May 16, 2013, and incorporated herein by reference.
3.5	Certificate of Designations of The Bank of New York Mellon Corporation with respect to the Series F Noncumulative Perpetual Preferred Stock, dated July 29, 2016.	Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-35651) as filed with the Commission on Aug. 1, 2016, and incorporated herein by reference.
3.6	Certificate of Designations of The Bank of New York Mellon Corporation with respect to the Series G Noncumulative Perpetual Preferred Stock, dated May 15, 2020.	Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-35651) as filed with the Commission on May 19, 2020 and incorporated herein by reference.
3.7	Certificate of Designations of The Bank of New York Mellon Corporation with respect to the Series H Noncumulative Perpetual Preferred Stock, dated Nov. 2, 2020.	Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-35651) as filed with the Commission on Nov. 3, 2020 and incorporated herein by reference.

Exhibit		Description	Method of Filing
3.8		Certificate of Designations of The Bank of New York Mellon Corporation with respect to the Series I Noncumulative Perpetual Preferred Stock, dated Nov. 16, 2021.	Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-35651) as filed with the Commission on Nov. 18, 2021, and incorporated herein by reference.
3.9		Amended and Restated By-Laws of The Bank of New York Mellon Corporation, as amended and restated on Feb. 12, 2018.	Previously filed as Exhibit 3.1 to the Company's Current Report on Form 8-K (File No. 001-35651) as filed with the Commission on Feb. 13, 2018, and incorporated herein by reference.
4.1		None of the instruments defining the rights of holders of long-term debt of the Parent or any of its subsidiaries represented long-term debt in excess of 10% of the total assets of the Company as of Dec. 31, 2022. The Company hereby agrees to furnish to the Commission, upon request, a copy of any such instrument.	N/A
4.2		Description of the Company's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934.	Previously filed as Exhibit 4.2 to the Company's Annual Report on Form 10-K (File No. 001-35651) as filed with the Commission on Feb. 25, 2022, and incorporated herein by reference.
10.1	*	The Bank of New York Company, Inc. Excess Benefit Plan as amended through Dec. 8, 1992.	Previously filed as Exhibit 10(d) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1992, and incorporated herein by reference.
10.2	*	Amendment effective as of Aug. 11, 1994 to The Bank of New York Company, Inc. Excess Benefit Plan.	Previously filed as Exhibit 10(g) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1994, and incorporated herein by reference.
10.3	*	Amendment effective as of Nov. 1, 1995 to The Bank of New York Company, Inc. Excess Benefit Plan.	Previously filed as Exhibit 10(i) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1995, and incorporated herein by reference.
10.4	*	Amendment effective as of July 1, 1996 to The Bank of New York Company, Inc. Excess Benefit Plan.	Previously filed as Exhibit 10(kk) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1999, and incorporated herein by reference.
10.5	*	The Bank of New York Company, Inc. Supplemental Executive Retirement Plan.	Previously filed as Exhibit 10(n) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1992, and incorporated herein by reference.

Exhibit		Description	Method of Filing
10.6	*	Amendment effective as of March 9, 1993 to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan.	Previously filed as Exhibit 10(k) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1993, and incorporated herein by reference.
10.7	*	Amendment effective as of Oct. 11, 1994 to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan.	Previously filed as Exhibit 10(o) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1994, and incorporated herein by reference.
10.8	*	Amendment effective as of July 1, 1996 to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan.	Previously filed as Exhibit 10(a) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1996, and incorporated herein by reference.
10.9	*	Amendment effective as of Nov. 12, 1996 to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan.	Previously filed as Exhibit 10(b) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1996, and incorporated herein by reference.
10.10	*	Amendment effective as of July 11, 2000 to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan.	Previously filed as Exhibit 10(e) to The Bank of New York Company, Inc.'s Quarterly Report on Form 10-Q (File No. 001-06152) for the quarter ended Sept. 30, 2000, and incorporated herein by reference.
10.11	*	Amendment effective as of Feb. 13, 2001 to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan.	Previously filed as Exhibit 10(ggg) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 2000, and incorporated herein by reference.
10.12	*	Amendment effective as of Jan. 1, 2006 to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan.	Previously filed as Exhibit 10(yy) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 2005, and incorporated herein by reference.
10.13	*	Deferred Compensation Plan for Non-Employee Directors of The Bank of New York Company, Inc.	Previously filed as Exhibit 10(s) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1993, and incorporated herein by reference.
10.14	*	Amendment effective as of Nov. 8, 1994 to Deferred Compensation Plan for Non-Employee Directors of The Bank of New York Company, Inc.	Previously filed as Exhibit 10(z) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1994, and incorporated herein by reference.

Exhibit		Description	Method of Filing
10.15	*	Amendment effective Feb. 11, 1997 to Deferred Compensation Plan for Non-Employee Directors of The Bank of New York Company, Inc.	Previously filed as Exhibit 10(j) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 1996, and incorporated herein by reference.
10.16	*	Amendment to Deferred Compensation Plan for Non-Employee Directors of The Bank of New York Company, Inc. effective as of July 11, 2000.	Previously filed as Exhibit 10(d) to The Bank of New York Company, Inc.'s Quarterly Report on Form 10-Q (File No. 001-06152) for the quarter ended Sept. 30, 2000, and incorporated herein by reference.
10.17	*	Amendment effective as of Nov. 12, 2002 to Deferred Compensation Plan for Non-Employee Directors of The Bank of New York Company, Inc.	Previously filed as Exhibit 10(yy) to The Bank of New York Company, Inc.'s Annual Report on Form 10-K (File No. 001-06152) for the year ended Dec. 31, 2003, and incorporated herein by reference.
10.18	*	The Bank of New York Mellon Corporation Deferred Compensation Plan for Directors, effective Jan. 1, 2008.	Previously filed as Exhibit 10.71 to the Company's Annual Report on Form 10-K (File No. 000-52710) for the year ended Dec. 31, 2007, and incorporated herein by reference.
10.19	*	The Bank of New York Mellon Corporation Deferred Compensation Plan for Employees.	Previously filed as Exhibit 4.4 to the Company's Form S-8 (File No. 333-149473) filed on Feb. 29, 2008, and incorporated herein by reference.
10.20	*	Form of Long Term Incentive Plan Deferred Stock Unit Agreement for Directors of The Bank of New York Mellon Corporation.	Previously filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 000-52710) for the quarter ended June 30, 2008, and incorporated herein by reference.
10.21	*	Amendment to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan, effective as of Jan. 1, 2009.	Previously filed as Exhibit 10.156 to the Company's Annual Report on Form 10-K (File No. 000-52710) for the year ended Dec. 31, 2008, and incorporated herein by reference.
10.22	*	Amendment to The Bank of New York Company, Inc. Excess Benefit Plan, effective as of Jan. 1, 2009.	Previously filed as Exhibit 10.158 to the Company's Annual Report on Form 10-K (File No. 000-52710) for the year ended Dec. 31, 2008, and incorporated herein by reference.
10.23	*	The Bank of New York Mellon Corporation Policy Regarding Shareholder Approval of Future Senior Officers Severance Arrangements, effective July 12, 2010.	Previously filed as Exhibit 99.3 to the Company's Current Report on Form 8-K (File No. 000-52710) as filed with the Commission on July 16, 2010, and incorporated herein by reference.
10.24	*	Amendment to The Bank of New York Company, Inc. Supplemental Executive Retirement Plan, effective as of Dec. 31, 2014.	Previously filed as Exhibit 10.76 to BNY Mellon's Annual Report on Form 10-K (File No. 001-35651) for the year ended Dec. 31, 2014, and incorporated herein by reference.

Exhibit		Description	Method of Filing
10.25	*	The Bank of New York Mellon Corporation Defined Contribution IRC 401(a)(17) Plan (as amended and restated).	Previously filed as Exhibit 10.69 to the Company's Annual Report on Form 10-K (File No. 001-35651) for the year ended Dec. 31, 2015, and incorporated herein by reference.
10.26	*	Amendment effective as of June 30, 2015 to The Bank of New York Company, Inc. Excess Benefit Plan.	Previously filed as Exhibit 10.70 to the Company's Annual Report on Form 10-K (File No. 001-35651) for the year ended Dec. 31, 2015, and incorporated herein by reference.
10.27	*	Form of Amended and Restated Indemnification Agreement with Directors of The Bank of New York Mellon Corporation.	Previously filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended June 30, 2016, and incorporated herein by reference.
10.28	*	Form of Amended and Restated Indemnification Agreement with Executive Officers of The Bank of New York Mellon Corporation.	Previously filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended June 30, 2016, and incorporated herein by reference.
10.29	*	The Bank of New York Mellon Corporation Executive Severance Plan, as amended on Feb. 12, 2018.	Previously filed as Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-35651) as filed with the Commission on Feb. 13, 2018, and incorporated herein by reference.
10.30	*	Amendment effective as of Nov. 1, 2018 to The Bank of New York Company, Inc. Excess Benefit Plan.	Previously filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended Sept. 30, 2018, and incorporated herein by reference.
10.31	*	The Bank of New York Mellon Corporation 2019 Long-Term Incentive Plan.	Previously filed as Annex C to the Company's definitive Proxy Statement on Schedule 14A filed on March 8, 2019 and incorporated herein by reference.
10.32	*	2019 Form of Performance Share Unit Agreement.	Previously filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended June 30, 2019, and incorporated herein by reference.
10.33	*	2019 Form of Restricted Stock Unit Agreement.	Previously filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended June 30, 2019, and incorporated herein by reference.
10.34	*	The Bank of New York Mellon Corporation 2019 Executive Incentive Compensation Plan.	Previously filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended Sept. 30, 2019, and incorporated herein by reference.
10.35	*	2020 Form of Performance Share Unit Agreement.	Previously filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended Sept. 30, 2020, and incorporated herein by reference.

Exhibit		Description	Method of Filing
10.36	*	2020 Form of Restricted Stock Unit Agreement.	Previously filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended Sept. 30, 2020, and incorporated herein by reference.
10.37	*	Letter Agreement, dated Aug. 19, 2020, between The Bank of New York Mellon Corporation and Robin Vince.	Previously filed as Exhibit 10.49 to the Company's Annual Report on Form 10-K (File No. 001-35651) for the year ended Dec. 31, 2020, and incorporated herein by reference.
10.38	*	2021 Form of Performance Share Unit Agreement.	Previously filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended June 30, 2021, and incorporated herein by reference.
10.39	*	2021 Form of Restricted Stock Unit Agreement.	Previously filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended June 30, 2021, and incorporated herein by reference.
10.40	*	2022 Form of Performance Share Unit Agreement.	Previously filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended Sept. 30, 2022, and incorporated herein by reference.
10.41	*	2022 Form of Restricted Stock Unit Agreement.	Previously filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended Sept. 30, 2022, and incorporated herein by reference.
10.42	*	Amendment, dated Aug. 30, 2022, to Letter Agreement between The Bank of New York Mellon Corporation and Robin Vince.	Filed herewith.
10.43	*	Gulfstream Aircraft Time Sharing Agreement, entered into as of Jan. 23, 2023, by and between The Bank of New York Mellon and Robin Vince.	Filed herewith.
10.44	*	Dassault Aircraft Time Sharing Agreement, entered into as of Jan. 23, 2023, by and between The Bank of New York Mellon and Robin Vince.	Filed herewith.
13.1		All portions of The Bank of New York Mellon Corporation 2022 Annual Report to Shareholders that are incorporated herein by reference. The remaining portions are furnished for the information of the SEC and are not "filed" as part of this filing.	Filed and furnished herewith.
21.1		Primary subsidiaries of the Company.	Filed herewith.

Exhibit	Description	Method of Filing
22.1	Subsidiary Issuer of Guaranteed Securities.	Previously filed as Exhibit 22.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-35651) for the quarter ended March 31, 2021, and incorporated herein by reference.
23.1	Consent of KPMG LLP.	Filed herewith.
24.1	Power of Attorney.	Filed herewith.
31.1	Certification of the Chief Executive Officer pursuant to Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Filed herewith.
31.2	Certification of the Chief Financial Officer pursuant to Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Filed herewith.
32.1	Certification of the Chief Executive Officer pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	Furnished herewith.
32.2	Certification of the Chief Financial Officer pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	Furnished herewith.
101.INS	Inline XBRL Instance Document.	This 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.	Filed herewith.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.	Filed herewith.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.	Filed herewith.
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.	Filed herewith.
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.	Filed herewith.
104	The cover page of The Bank of New York Mellon Corporation's Annual Report on Form 10-K for the year ended Dec. 31, 2022, formatted in inline XBRL.	The cover page interactive data file is embedded within the inline XBRL document and included in Exhibit 101.

* Management contract or compensatory plan, contract or arrangement.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, BNY Mellon has duly caused this Annual Report to be signed on its behalf by the undersigned, thereunto duly authorized.

The Bank of New York Mellon Corporation

By: /s/ Robin Vince
Robin Vince
President and Chief Executive Officer

DATED: February 27, 2023

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report has been signed below by the following persons on behalf of BNY Mellon and in the capacities and on the date indicated.

Signature	Capacities
By: /s/ Robin Vince Robin Vince President and Chief Executive Officer	Director and Principal Executive Officer
By: /s/ Dermot McDonogh Dermot McDonogh Chief Financial Officer	Principal Financial Officer
By: /s/ Kurtis R. Kurimsky Kurtis R. Kurimsky Corporate Controller	Principal Accounting Officer
Linda Z. Cook; Joseph J. Echevarria; M. Amy Gilliland; Jeffrey A. Goldstein; K. Guru Gowrappan; Ralph Izzo; Sandra E. O'Connor; Elizabeth E. Robinson; Frederick O. Terrell; Alfred W. Zollar	Directors
By: /s/ J. Kevin McCarthy J. Kevin McCarthy Attorney-in-fact	DATED: February 27, 2023

Exhibit 10.42



240 Greenwich Street
15th Floor
New York, NY 10286

August 30, 2022

Mr. Robin Vince
Chief Executive Officer

Dear Robin:

This letter (this "Letter") serves to confirm that with respect to the Special Vesting Terms provided for in your offer letter dated August 19, 2020 (the "2020 Letter"), it is hereby agreed that those provisions shall not apply with respect to any RSUs or PSUs (or any other otherwise Covered Awards) awarded to you by the Company on or after September 1, 2022 (the "Effective Date"). To the extent you are granted any RSUs or PSUs on or after the Effective Date, such awards will be subject to the terms and conditions as set forth in the applicable plans and applicable award agreements. Capitalized terms used in this Letter not otherwise defined shall have the meaning set forth in the 2020 Letter.

This Letter supersedes and amends the relevant provisions of the 2020 Letter. For the avoidance of doubt, the provisions in the 2020 Letter (including vesting terms, as applicable) related to Covered Awards granted prior to the Effective Date, the Sign-On Award, Cash-Buyout Award, Equity Buyout Award and Replacement Shares/Future Buyout Awards continue to apply in accordance with the 2020 Letter.

Please acknowledge your acceptance and agreement to the terms in this Letter by signing below.

Sincerely yours,

/s/ Jolen Anderson

Jolen Anderson

Global Head of Human Resources

AGREED TO AND ACCEPTED:

/s/ Robin Vince

Robin Vince

Exhibit 10.43

AIRCRAFT TIME SHARING AGREEMENT

This Aircraft Time Sharing Agreement (the "Agreement") is entered into as of January 23, 2023 (the "Effective Date"), by and between **The Bank of New York Mellon**, a New York corporation ("Lessor"), and Robin Vince, an individual ("Lessee").

RECITALS

A. Lessor is in legal possession of the Aircraft (as defined below).

B. Lessor employs (or contracts for the services of) a fully qualified flight crew to operate the Aircraft.

C. Lessee desires from time to time to lease the Aircraft, with a flight crew, on a non-exclusive basis, from Lessor on a time sharing basis as defined in Section 91.501(c)(1) of the FAR (as defined below) and in accordance with Sections 91.501(b)(6), 91.501(c)(1) and 91.501(d) of the FAR.

D. Lessor is willing to lease the Aircraft, with flight crew, on a non-exclusive basis, to Lessee on such a time sharing basis.

E. During the term of this Agreement, the Aircraft will be subject to use by Lessor and Lessor Related Persons (as defined in Section 6.3).

AGREEMENT

NOW, THEREFORE, Lessor and Lessee, in consideration of the promises of the other set forth herein, intending to be legally bound, hereby agree as follows:

1. **Definitions**.

1.1. **Specific Terms**. The following defined terms shall have the following meanings when used in this Agreement. The meanings assigned by this Agreement shall apply to the plural, singular, possessive or any other form of the term. Words of the masculine, feminine or neuter gender used in this Agreement include all other genders.

"**Agreement**" is defined in the preamble.

"**Aircraft**" means the Airframe, the Engines, and the Aircraft Documents. Such Engines shall be deemed part of the "Aircraft" whether or not from time to time attached to the Airframe or removed from the Aircraft.

"**Aircraft Documents**" means, as to the Aircraft, all flights, records, maintenance records, historical records, modification records, overhaul records, manuals, logbooks, authorizations, drawings and data relating to the Airframe, any Engine or any Part, that are required by Applicable Law to be created or maintained with respect to the maintenance and/or operation of the Aircraft.

"**Airframe**" means the Airframe described in Schedule 1 attached hereto and made a part hereof, as the same may be amended from time to time as set forth below, together with any and all Parts (including, but not limited to, landing gear and auxiliary power units, but excluding Engines or engines) so long as such Parts shall be either incorporated or installed in or attached to the Airframe.

"**Applicable Law**" means, without limitation, all applicable laws, treaties, international agreements, decisions and orders of any court, arbitration or governmental agency or authority and rules, regulations, orders, directives, licenses and permits of any governmental body, instrumentality, agency or authority, including, without limitation, the FAR and 49 U.S.C. § 41101, et seq., as amended.

"**Business Day**" means Monday through Friday, exclusive of legal holidays under the laws of the United States or the State of New York.

"**Default Rate**" means a per annum rate of interest equal to the SOFR, plus one percent (1%).

"**Effective Date**" means the date so specified in the preamble of this Agreement.

"**Engine(s)**" means the engine(s) identified in Schedule 1 (or any replacement or loaner engines), as the same may be amended from time to time as set forth below, together with any and all Parts so long as the same shall be either incorporated or installed in or attached to such Engine.

"**FAA**" means the Federal Aviation Administration or any successor agency.

"**FAR**" means collectively the Aeronautics Regulations of the Federal Aviation Administration and the Department of Transportation, as codified at Title 14, Parts 1 to 399 of the United States Code of Federal Regulations.

"**Lessee**" is defined in the preamble.

"**Lessor**" is defined in the preamble.

"**Lessor Related Person**" is defined in Section 6.3.

"**Operational Control**" has the same meaning given the term in Section 1.1 of the FAR.

"**Owner**" means The Bank of New York Mellon.

"**Parts**" means all appliances, components, parts, instruments, appurtenances, accessories, furnishings or other equipment of whatever nature (other than complete Engines or engines) which may from time to time be incorporated or installed in or attached to the Airframe or any Engine and includes replacement parts.

"**Pilot in Command**" has the same meaning given the term in Section 1.1 of the FAR.

"**Taxes**" means all sales taxes, use taxes, retailer taxes, duties, fees, excise taxes (including, without limitation federal transportation excise taxes), or other taxes of any kind which may be assessed or levied by any Taxing Jurisdiction as a result of the lease of the Aircraft to Lessee, or the use of the Aircraft by Lessee, or the provision of a taxable transportation service to Lessee using the Aircraft.

"**Taxing Jurisdiction**" means any federal, state, county, local, airport, district, foreign, or other governmental authority that imposes Taxes.

"**Term**" means the term of this Agreement set forth in Section 3.

1.2. **Other Terms**. Unless otherwise specified, the following terms, whether or not capitalized, will have the following meanings as used in this Agreement. "Hereof," "herein," "hereunder," and similar terms refer to this Agreement as a whole, and are not limited to the section or subdivision of this Agreement in which the term appears. "Includes," "including," and similar terms mean without limitation. "Person" includes any natural person, corporation, general or limited partnership, limited liability company, other incorporated or unincorporated association, trust, governmental body or other entity.

2. **Agreement to lease**.

2.1. **Agreement to lease**. Lessor agrees to lease the Aircraft to Lessee on an "as needed and as available" basis, and to provide a fully qualified flight crew for all flights of Lessee, in accordance with the terms and conditions of this Agreement.

2.2. **Intent and Interpretation**. The parties hereto intend that this Agreement shall constitute, and this Agreement shall be interpreted as, a Time Sharing Agreement as defined in Section 91.501(c)(1) of the FAR.

2.3. **Non-Exclusivity**. Lessee acknowledges that the Aircraft is leased to Lessee hereunder on a non-exclusive basis, and that the Aircraft will also be subject to use by Lessor and Lessor's Related Persons.

3. **Term**. The initial term (the "Initial Term") of this Agreement begins on the Effective Date, and ends on the 6-month anniversary of the Effective Date (subject to earlier termination as provided below). At the end of the Initial Term, this Agreement shall automatically be renewed for successive 6-month terms until terminated as provided below. Notwithstanding the foregoing, Lessee shall have the right to terminate this Agreement with or without cause on thirty (30) days written notice to Lessor. After the Initial Term, Lessor shall have the right to terminate this Agreement with or without cause on thirty (30) days written notice to Lessee; provided, however, this Agreement may be terminated on such shorter notice as may be required to comply with Applicable Law, the requirements of any financial institution, or insurance requirements.

4. **Payments**.

4.1. **Flight Charges**. Lessee shall pay Lessor for each flight conducted for Lessee under this Agreement an amount equal to the maximum amount of expense reimbursement permitted in accordance with Section 91.501(d) of the FAR, which expenses include and are limited to:

4.1.1. fuel oil, lubricants, and other additives;

4.1.2. travel expenses of the crew, including food, lodging and ground transportation;

4.1.3. hangar and tie down costs away from the Aircraft's base of operation;

4.1.4. insurance obtained for the specific flight;

4.1.5. landing fees, airport taxes and similar assessments;

4.1.6. customs, foreign permit, and similar fees directly related to the flight;

4.1.7. in-flight food and beverages;

4.1.8. passenger ground transportation;

4.1.9. flight planning and weather contract services; and

4.1.10. an additional charge equal to 100% of the expenses listed in Section 4.1.1.

4.2. **Invoices and Payment**. Lessor will initially pay all expenses related to the operation of the Aircraft in the ordinary course, provided that as soon as practicable after the last day of any calendar month during which any flight for the account of Lessee has been conducted, Lessor shall provide an invoice to Lessee for an amount determined in accordance with Section 4.1 above. Lessee shall remit the full amount of any such invoice, together with any applicable Taxes under Section 5, to Lessor promptly within thirty (30) days of receipt of the invoice. In the event Lessor has not received a supplier invoice for reimbursable charges relating to any such flight prior to such invoicing, Lessor shall re-compute the amount determined in accordance with Section 4.1 above and if an additional amount is due from Lessee to Lessor, issue a supplemental invoice for such charges to Lessee as soon as practicable after the date of receipt of such supplier invoice, and Lessee shall pay such supplemental invoice amount upon receipt thereof. Delinquent payments, defined as payments received more than thirty (30) days after receipt of invoice, to Lessor by Lessee hereunder shall bear interest at the Default Rate from the due date until the date of payment. Lessee shall further pay all costs incurred Lessor by in collecting any amounts due from

Lessee pursuant to the provisions of this Section 4.2 after delinquency, including court costs and reasonable attorneys' fees.

5. **Taxes**. None of the payments to be made by Lessee under Section 4 of this Agreement includes, and Lessee shall be responsible for, shall indemnify and hold harmless Lessor against, any Taxes which may be assessed or levied by any Taxing Jurisdiction as a result of the lease of the Aircraft to Lessee, or the use of the Aircraft by Lessee, or the provision of a taxable transportation service to that Lessee using the Aircraft. Without limiting the generality of the foregoing, Lessee and Lessor specifically acknowledge that all Lessee's flights will be subject to commercial air transportation excise taxes pursuant to Section 4261 of the Internal Revenue Code of 1986, as amended, regardless of whether any such flight is considered "noncommercial" under the FAR. Lessee shall remit to Lessor all such Taxes together with each payment made pursuant to Section 4.2.

6. **Scheduling Flights**.

6.1. **Submitting Flight Requests**. Lessee shall submit requests for flights and proposed flight schedules to Lessor as far in advance of any given flight as possible, preferably at least two (2) Business Days prior to Lessee's desired departure date. Requests for flights and proposed flight schedules shall be in a form, whether written or oral, mutually convenient to, and agreed upon by, Lessor and Lessee. In addition to requests for flights and proposed flight schedules, Lessee shall provide Lessor at least the following information for each proposed flight as soon as possible prior to scheduled departure:

6.1.1. departure airport;

6.1.2. destination airport;

6.1.3. date and time of outbound departure (including any multiple leg destinations);

6.1.4. the number of anticipated passengers and their names;

6.1.5. the nature and extent of luggage and/or cargo to be carried;

6.1.6. the date and time of return flight (including any multiple leg destinations), if any;

6.1.7. for international trips, passport information and Customs-required information for all passengers; and

6.1.8. any other information concerning the proposed flight that may be pertinent or required by Lessor's flight crew.

Until such time as Lessor notifies Lessee otherwise, all flight requests hereunder shall be submitted to the following representative of Lessor:

Travel Services

6.2. **Coordination of Flight Requests**. Each use of the Aircraft by Lessee shall be subject to Lessor's prior approval. Lessor will use reasonable efforts to accommodate Lessee's needs and avoid conflicts in scheduling; provided however, that Lessor shall not be liable to Lessee or any other person for loss, injury, or damage occasioned by any delay or failure to furnish the Aircraft, with a flight crew, pursuant to this Agreement for any reason. Lessor shall not be obligated to retain or contract for additional flight crew or maintenance personnel or equipment in order to accommodate a flight request submitted by Lessee.

6.3. **Subordinated Use of Aircraft**. Lessee's rights to schedule the use of the Aircraft shall at all times be subordinate to the Aircraft use requirements of Lessor, and any parent corporation, subsidiary or affiliate of Lessor ("Lessor Related Persons").

7. **Title and Operation**.

7.1. **Title and Registration**. Lessee acknowledges that title to the Aircraft shall remain vested in Owner, and Lessee undertakes, to the extent permitted by Applicable Law to do all such further acts, deeds, assurances, or things as may, in the reasonable opinion of Owner or Lessor, be necessary or desirable in order to protect or preserve Owner's title to the Aircraft. To the extent requested by Owner or Lessor, or their respective and assigns, Lessee shall take all action necessary to continue all rights and interests of Owner, and their respective successors or assigns in the Aircraft under Applicable Law against any claims of Lessee and any persons claiming by, through, or under Lessee.

7.2. **Aircraft Maintenance**. Lessor shall be solely responsible for maintenance, preventative maintenance, and required or otherwise necessary inspections of the Aircraft, and shall take such requirements into account in scheduling the Aircraft. No period of maintenance, preventative maintenance, or inspection shall be delayed or postponed for the purpose of scheduling the Aircraft, unless said maintenance or inspection can be safely conducted at a later time in compliance with all Applicable Law, and with the sound discretion of the Pilot in Command.

7.3. **Flight Crews**. Lessor shall provide to Lessee a qualified flight crew for each flight conducted in accordance with this Agreement. Lessor may, if it so chooses, elect not to hire its own pilots for any given flight hereunder, but to contract instead for pilot services from a third party. Whether or not the flight crew is supplied by a third party, the flight crew is under the exclusive command and control of Lessor in all phases of all flights conducted hereunder.

7.4. **OPERATIONAL CONTROL**. THE PARTIES EXPRESSLY AGREE THAT LESSOR SHALL HAVE AND MAINTAIN OPERATIONAL CONTROL OF THE AIRCRAFT FOR ALL FLIGHTS OPERATED UNDER THIS AGREEMENT, AND THAT THE INTENT OF THE PARTIES IS THAT THIS AGREEMENT CONSTITUTE A "TIME SHARING AGREEMENT" AS SUCH TERM IS DEFINED IN SECTION 91.501(C)(1) OF THE FAR. LESSOR SHALL EXERCISE EXCLUSIVE AUTHORITY OVER INITIATING, CONDUCTING, OR TERMINATING ANY FLIGHT CONDUCTED ON BEHALF OF LESSEE PURSUANT TO THIS AGREEMENT.

7.5. **Authority of Pilot in Command**. Notwithstanding that Lessor shall have Operational Control of the Aircraft during any flight conducted pursuant to this Agreement, Lessor and Lessee expressly agree that the Pilot in Command, in his or her sole discretion, may terminate any flight, refuse to commence any flight, or take any other flight-related action which in the judgment of the Pilot in Command is necessitated by considerations of safety. The Pilot in Command shall have final and complete authority to postpone or cancel any flight for any reason or condition which in his or her judgment would compromise the safety of the flight. No such action of the Pilot in Command shall create or support any liability of Lessor to Lessee for loss, injury, damage, or delay.

7.6. **Base of Operation**. For purposes of this Agreement, the base of operation is Teterboro Airport, New Jersey (KTEB); provided, however, that the base of operation for purposes of this Agreement may be changed temporarily or permanently by Lessor without notice. Lessor will make reasonable efforts to notify Lessee of changes in the base of operations at least forty-eight (48) hours prior to Lessee's scheduled flights.

7.7. **Force Majeure**. Lessor shall not be liable for delay or failure to furnish the Aircraft and flight crew pursuant to this Agreement when such failure is caused by government regulation or authority, mechanical difficulty, war, civil commotion, strikes or labor disputes, weather conditions, acts of God, or other unforeseen or unanticipated circumstances.

8. **Insurance and Limitation of Liability**. Lessor represents that the flight operations for the Aircraft as contemplated in this Agreement will be covered by the Lessor's aircraft all-risk physical damage insurance (hull coverage), aircraft bodily injury and property damage liability insurance. Lessor

will retain all rights and benefits with respect to the proceeds payable under policies of hull insurance maintained by Lessor that may be payable as a result of any incident or occurrence while an Aircraft is being operated on behalf of Lessee under this Agreement.

8.1. **Additional policy requirements**. Any policies of insurance carried in accordance with this Agreement and any policies taken out in substitution or replacement of any such policies shall:

8.1.1. name Lessee as an additional insured;

8.1.2. include a severability of interest clause providing that such policy shall operate in the same manner as if there were a separate policy covering each insured;

8.1.3. shall be primary, without right of contribution from any other insurance maintained by Lessee; and

8.1.4. as respects hull physical damage, waive any right of set off or subrogation against Lessee.

8.2. **Limitation of Liability**. Lessee agrees that the insurance specified in this Section 8 provides its sole recourse for all claims, losses, liabilities, obligations, demands, suits, judgments or causes of action, penalties, fines, costs and expenses of any nature whatsoever, including attorneys' fees and expenses for or on account of or arising out of, or in any way connected with the use of the Aircraft by Lessee or its guests, including injury to or death of any persons, including Lessee and its guests which may result from or arise out of the use or operation of the Aircraft during the term of this Agreement ("Claims"), regardless of whether such Claims arise out of or are caused by, in whole or in part, the negligence, gross negligence, or strict liability of Lessor.

8.3. In no event shall Lessor be liable to Lessee or his employees, agents, representatives, guests, or invitees for any claims or liabilities, including property damage or injury and death, and expenses, including attorney's fees, in excess of the amount paid by Lessor's insurance carrier in the event of such loss.

8.4. Upon request, the Lessor shall deliver to Lessee a certificate of insurance evidencing the insurance required to be maintained by Lessor under this Article.

8.5. This Section shall survive termination of this Agreement.

9. **Representations and Warranties**. Lessee represents and warrants that Lessee shall:

9.1. use the Aircraft solely for and on account of his own business or personal use only, and will not use the Aircraft for the purpose of providing transportation of passengers or cargo for compensation or hire, for or in connection with any illegal purpose, in violation of any Applicable Law, or in violation of any insurance policy with respect to Aircraft;

9.2. refrain from incurring any mechanic's or other lien in connection with inspection, preventative maintenance, maintenance, or storage of the Aircraft, whether permissible or impermissible under this Agreement;

9.3. not attempt to convey, mortgage, assign, lease, lease, or in any way alienate the Aircraft or create any kind of lien or security interest involving the Aircraft, or do anything or take any action that might mature into such a lien; and

9.4. abide by and conform, during the Term, to all Applicable Laws, governmental and airport orders, rules and regulations, as shall from time to time be in effect relating in any way to the operation and use of the Aircraft by Lessee.

10. **Miscellaneous**.

10.1. **Notices**. All notices hereunder (except for notices made purely for flight scheduling, which are governed by the provisions of Section 6) shall be delivered by hand, sent by reputable guaranteed overnight delivery service, or sent by first-class United States mail, certified, postage prepaid, return receipt requested to the addresses of the parties set forth below:

If to Lessor:

James J. Killerlane III
Corporate Secretary, Managing Director and Deputy General Counsel
240 Greenwich Street, 18th Floor
New York, NY 10286
T: ###-###-####

If to Lessee:

Robin Vince
240 Greenwich Street
New York, NY 10286
T: ###-###-####

Notice shall be deemed given when delivered or sent in the manner provided herein. At any time, either party may change its address for purposes of notices under this Agreement by giving notice to the other party in accordance herewith.

10.2. **No Waiver**. No purported waiver by either party of any default by the other party of any term or provision contained herein shall be deemed to be a waiver of such term or provision unless the waiver is in writing and signed by the waiving party. No such waiver shall in any event be deemed a waiver or any subsequent default under the same or any other term or provision contained herein.

10.3. **Entire Agreement**. This Agreement sets forth the entire understanding between the parties concerning the subject matter of this Agreement and incorporates all prior negotiations and understandings. There are no covenants, promises, agreements, conditions or understandings, either oral or written, between them relating to the subject matter of this Agreement other than those set forth herein. No representation or warranty has been made by or on behalf of any party (or any officer, director, employee, or agent thereof) to induce any other party to enter into this Agreement or to abide by or consummate any transaction contemplated by any timers of this Agreement, except representations and warranties, if any, expressly set forth herein. No alteration, amendment, change, or addition to this Agreement shall be binding upon either party unless in writing and signed by the party to be charged.

10.4. **No Agency or Partnership**. Nothing contained in this Agreement shall be deemed or construed by the parties hereto or by any third person to create the relationship of principal and agent or of partnership or of joint venture.

10.5. **Successors and Assigns**. Each and all of the provisions of this Agreement shall be binding upon and inure to the benefit of the parties hereto, and except as otherwise specifically provided in this Agreement, their respective successors and assigns, provided, however, that neither this Agreement, nor any rights herein granted may be assigned, transferred, or encumbered by Lessee, and any purported or attempted transfer or assignment by Lessee without the prior express written consent of Lessor shall be void and of no effect.

10.6. **Third Parties**. Nothing herein expressed or implied is intended or shall be construed to confer upon or give any person other than the parties hereto and their successors and assigns any rights or remedies under or by reason of this Agreement.

10.7. **Captions; Recitals**. The captions and section numbers appearing in this Agreement are inserted only as a matter of convenience. The captions and section numbers do not define, limit, construe, or describe the scope or intent of the provisions of this Agreement. The Recitals at the beginning of this

Agreement are intended to give an understanding of the factual background that led the parties to enter into this Agreement. The Recitals are not intended to be warranties, representations, covenants, or otherwise contractually binding.

10.8. **Prohibited or Unenforceable Provisions**. Any provision of this Agreement which is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions hereof. To the extent permitted by Applicable Law, each of Lessor and Lessee hereby waives any provision of Applicable Law which renders any provision hereof prohibited or unenforceable in any respect.

10.9. **Governing Law**. The Agreement shall be governed and construed by the provisions hereof and in accordance with the laws of the State of New York applicable to agreements to be performed in the State of New York, without giving effect to its conflict of laws provisions. Any disputes arising out of this Agreement will be subject to the exclusive jurisdiction of the U.S. District Court located in New York County, New York if federal jurisdiction is available and to the courts of the State of New York if federal jurisdiction is not available.

10.10. **Counterparts**. This Agreement may be executed in one or more counterparts, each of which will be deemed an original and part of one and the same document.

11. **Required Filings**. Lessee authorizes Lessor at any time, and from time to time, to file any such document with the FAA and/or such other governmental agencies or offices as Lessor shall judge to be necessary or desirable in the name of, and on behalf of, Lessee, which authorization and power is coupled with an interest and shall be irrevocable.

12. **Disclaimer**. The Aircraft is being leased by Lessor to Lessee hereunder on a completely "as is, where is" basis, which is acknowledged and agreed to by Lessee. The warranties and representations set forth in this Agreement are exclusive and in lieu of all other representations or warranties whatsoever, express or implied, and Lessor has not made and shall not be construed or deemed to have made (whether by virtue of having leased the Aircraft under this Agreement, having leased the Aircraft from Lessor, having done or failed to do any act, or having acquired or failed to acquire any status under or in relation to this Agreement or otherwise) any other representation or warranty whatsoever, express or implied, with respect to the Aircraft or to any Part thereof, and specifically, without limitation, in this respect disclaims all representations and warranties concerning the title, airworthiness, value, condition, design, merchantability, compliance with specifications, construction and condition of the Aircraft, or fitness for a particular use of the Aircraft, and as to the absence of latent and other defects, whether or not discoverable, and as to the absence of any infringement or the like hereunder of any patent, trademark, or copyright, and as to the absence of obligations based on strict liability in tort, or as to the quality of the material or workmanship of the Aircraft or any part thereof, or any other representation or warranty whatsoever, express or implied (including any implied warranty arising from a course of performance, dealing, or usage of trade), with respect to the Aircraft or any Part thereof.

Lessee hereby waives, releases, disclaims and renounces all expectation of or reliance upon any such and other warranties, obligations, and liabilities of Lessor and rights, claims, and remedies of Lessee against Lessor express or implied, arising by law or otherwise, including but not limited to: (i) any implied warranty of merchantability or fitness for any particular use; (ii) any implied warranty arising from course of performance, course of dealing, or usage of trade; (iii) any obligation, liability, right, claim, or remedy in tort, whether or not arising from the negligence of Lessor, actual or imputed; and (iv) any obligation, liability, right, claim, or remedy for loss of or damage to the Aircraft, for loss of use, revenue, or profit with respect to the Aircraft, or for any other direct, indirect, incidental, or consequential damages.

13. **Truth in Leasing Disclosures**.

13.1. The parties hereto certify that a true copy of this Agreement shall be carried on the Aircraft at all times and shall be made available for inspection upon request by an appropriately constituted and identified representative of the Administrator of the FAA.

13.2. Lessor shall, for and on behalf of Lessor and Lessee, mail a copy of this Agreement by certified mail, return receipt requested, to: Federal Aviation Administration, Aircraft Registration Branch, Attn: Technical Section, P.O. Box 25724, Oklahoma City, Oklahoma 73125, within twenty-four (24) hours after execution of this Agreement.

13.3. At least forty-eight (48) hours before the first flight under this Agreement, Lessor shall, for and on behalf of Lessor and Lessee, comply with the notification requirements of Section 91.23(c)(3) of the FAR by notifying by telephone or in person the responsible Flight Standards office nearest the airport where such first flight will originate of the following: (i) the location of the airport of departure, (ii) the departure time, and (iii) the registration number of the Aircraft.

13.4. WITHIN THE TWELVE (12) MONTH PERIOD PRECEDING THE EFFECTIVE DATE, EXCEPT TO THE EXTENT THE AIRCRAFT IS LESS THAN TWELVE (12) MONTHS OLD, THE AIRCRAFT HAVE BEEN INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE FOLLOWING PROVISIONS OF FAR: FAR 91.409(F)(3) – A CURRENT INSPECTION PROGRAM RECOMMENDED BY THE MANUFACTURER.

13.5. THE PARTIES HERETO CERTIFY THAT, DURING THE TERM OF THIS AGREEMENT AND FOR ALL OPERATIONS CONDUCTED HEREUNDER, THE AIRCRAFT WILL BE MAINTAINED AND INSPECTED IN ACCORDANCE WITH THE PROVISIONS OF FAR 91.409(F)(3).

13.6. LESSOR, WHOSE ADDRESS APPEARS IN SECTION 10.1 ABOVE AND WHOSE AUTHORIZED SIGNATURE APPEARS BELOW, SHALL HAVE AND RETAIN OPERATIONAL CONTROL OF THE AIRCRAFT DURING ALL OPERATIONS CONDUCTED PURSUANT TO THIS AGREEMENT. EACH PARTY HERETO CERTIFIES THAT IT UNDERSTANDS THE EXTENT OF ITS RESPONSIBILITIES SET FORTH HEREIN FOR COMPLIANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS. AN EXPLANATION OF FACTORS BEARING ON OPERATIONAL CONTROL AND PERTINENT FEDERAL AVIATION REGULATIONS CAN BE OBTAINED FROM THE RESPONSIBLE FLIGHT STANDARDS OFFICE.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed effective as of the date first above written.

LESSOR:	**LESSEE**:
The Bank of New York Mellon	**Robin Vince**
By: /s/ James J. Killerlane III	By: /s/ Robin Vince
Name: James J. Killerlane III	Name: Robin Vince
Title: Corporate Secretary, Managing Director and Deputy General Counsel	Title: Chief Executive Officer

SCHEDULE 1

AIRCRAFT DESCRIPTION

Gulfstream Aerospace model GVI (G650ER) bearing aircraft registration number N784AH and serial MSN 6273, with two (2) Rolls Royce model BR725 engines bearing manufacturer's serial numbers 25654 and 25655.

Invoice Template

To:
Date Of Invoice:
Invoice Number:

Pursuant to United States of America Federal Aviation Regulations 91.501(c)(1) and 91.501(d), please reimburse the following expenses associated with the _____ 2023 flight of the Gulfstream Aerospace model GVI (G650ER), serial number 6273, registration number N784AH operated by _____ from _____ to _____with ____ passengers aboard.

Item of Expense	US$
1. Fuel, oil, lubricants, and other additives used: (Gallons x price of fuel) + cost of lubricants/additives = Y x 2 =	
2. Crew travel, lodging, food, and ground transportation expenses:	
3. Hangar/Tie Down costs in _____:	
4. Landing Fees/Airport Taxes:	
5. Customs Fees:	
6. Catering:	
7. Passenger ground transportation:	
8. Flight Planning and weather contract services for flight:	
9. Insurance obtained for the specific (above-described) flight:	
SUBTOTAL:	
FEDERAL EXCISE TAX:	
TOTAL DUE FOR FLIGHT:	

NOTE FOR USE OF INVOICE TEMPLATE
[Items #2, 3, and 9 include only those charges incurred away from base, and may not include pro-rated pilot salaries, benefits, pro-rated insurance costs, etc.]
Federal Excise Tax is typically 7.5%, plus a nominal per-passenger segment fee, and must be remitted for all "Timeshare" flights, irrespective of whether you elect to collect it from the user.

The Federal Excise Tax can be calculated as follows:

Number of Passengers(____ x 4.50[1]) x __ flight segments: _____
plus SUBTOTAL x 7.5%: _____

Total Federal Excise Tax: _____

[1] The per-segment "head tax" is subject to change, and will vary depending on whether the flight is USA domestic or international.

Exhibit 10.44

AIRCRAFT TIME SHARING AGREEMENT

This Aircraft Time Sharing Agreement (the "Agreement") is entered into as of January 23, 2023 (the "Effective Date"), by and between **The Bank of New York Mellon**, a New York corporation ("Lessor"), and Robin Vince, an individual ("Lessee").

RECITALS

A. Lessor is in legal possession of the Aircraft (as defined below).

B. Lessor employs (or contracts for the services of) a fully qualified flight crew to operate the Aircraft.

C. Lessee desires from time to time to lease the Aircraft, with a flight crew, on a non-exclusive basis, from Lessor on a time sharing basis as defined in Section 91.501(c)(1) of the FAR (as defined below) and in accordance with Sections 91.501(b)(6), 91.501(c)(1) and 91.501(d) of the FAR.

D. Lessor is willing to lease the Aircraft, with flight crew, on a non-exclusive basis, to Lessee on such a time sharing basis.

E. During the term of this Agreement, the Aircraft will be subject to use by Lessor and Lessor Related Persons (as defined in Section 6.3).

AGREEMENT

NOW, THEREFORE, Lessor and Lessee, in consideration of the promises of the other set forth herein, intending to be legally bound, hereby agree as follows:

1. **Definitions**.

1.1. **Specific Terms**. The following defined terms shall have the following meanings when used in this Agreement. The meanings assigned by this Agreement shall apply to the plural, singular, possessive or any other form of the term. Words of the masculine, feminine or neuter gender used in this Agreement include all other genders.

"**Agreement**" is defined in the preamble.

"**Aircraft**" means the Airframe, the Engines, and the Aircraft Documents. Such Engines shall be deemed part of the "Aircraft" whether or not from time to time attached to the Airframe or removed from the Aircraft.

"**Aircraft Documents**" means, as to the Aircraft, all flights, records, maintenance records, historical records, modification records, overhaul records, manuals, logbooks, authorizations, drawings and data relating to the Airframe, any Engine or any Part, that are required by Applicable Law to be created or maintained with respect to the maintenance and/or operation of the Aircraft.

"**Airframe**" means the Airframe described in Schedule 1 attached hereto and made a part hereof, as the same may be amended from time to time as set forth below, together with any and all Parts (including, but not limited to, landing gear and auxiliary power units, but excluding Engines or engines) so long as such Parts shall be either incorporated or installed in or attached to the Airframe.

"**Applicable Law**" means, without limitation, all applicable laws, treaties, international agreements, decisions and orders of any court, arbitration or governmental agency or authority and rules, regulations, orders, directives, licenses and permits of any governmental body, instrumentality, agency or authority, including, without limitation, the FAR and 49 U.S.C. § 41101, et seq., as amended.

"**Business Day**" means Monday through Friday, exclusive of legal holidays under the laws of the United States or the State of New York.

"**Default Rate**" means a per annum rate of interest equal to the SOFR, plus one percent (1%).

"**Effective Date**" means the date so specified in the preamble of this Agreement.

"**Engine(s)**" means the engine(s) identified in Schedule 1 (or any replacement or loaner engines), as the same may be amended from time to time as set forth below, together with any and all Parts so long as the same shall be either incorporated or installed in or attached to such Engine.

"**FAA**" means the Federal Aviation Administration or any successor agency.

"**FAR**" means collectively the Aeronautics Regulations of the Federal Aviation Administration and the Department of Transportation, as codified at Title 14, Parts 1 to 399 of the United States Code of Federal Regulations.

"**Lessee**" is defined in the preamble.

"**Lessor**" is defined in the preamble.

"**Lessor Related Person**" is defined in Section 6.3.

"**Operational Control**" has the same meaning given the term in Section 1.1 of the FAR.

"**Owner**" means The Bank of New York Mellon.

"**Parts**" means all appliances, components, parts, instruments, appurtenances, accessories, furnishings or other equipment of whatever nature (other than complete Engines or engines) which may from time to time be incorporated or installed in or attached to the Airframe or any Engine and includes replacement parts.

"**Pilot in Command**" has the same meaning given the term in Section 1.1 of the FAR.

"**Taxes**" means all sales taxes, use taxes, retailer taxes, duties, fees, excise taxes (including, without limitation federal transportation excise taxes), or other taxes of any kind which may be assessed or levied by any Taxing Jurisdiction as a result of the lease of the Aircraft to Lessee, or the use of the Aircraft by Lessee, or the provision of a taxable transportation service to Lessee using the Aircraft.

"**Taxing Jurisdiction**" means any federal, state, county, local, airport, district, foreign, or other governmental authority that imposes Taxes.

"**Term**" means the term of this Agreement set forth in Section 3.

1.2. **Other Terms**. Unless otherwise specified, the following terms, whether or not capitalized, will have the following meanings as used in this Agreement. "Hereof," "herein," "hereunder," and similar terms refer to this Agreement as a whole, and are not limited to the section or subdivision of this Agreement in which the term appears. "Includes," "including," and similar terms mean without limitation. "Person" includes any natural person, corporation, general or limited partnership, limited liability company, other incorporated or unincorporated association, trust, governmental body or other entity.

2. **Agreement to lease**.

2.1. **Agreement to lease**. Lessor agrees to lease the Aircraft to Lessee on an "as needed and as available" basis, and to provide a fully qualified flight crew for all flights of Lessee, in accordance with the terms and conditions of this Agreement.

2.2. **Intent and Interpretation**. The parties hereto intend that this Agreement shall constitute, and this Agreement shall be interpreted as, a Time Sharing Agreement as defined in Section 91.501(c)(1) of the FAR.

2.3. **Non-Exclusivity**. Lessee acknowledges that the Aircraft is leased to Lessee hereunder on a non-exclusive basis, and that the Aircraft will also be subject to use by Lessor and Lessor's Related Persons.

3. **Term**. The initial term (the "Initial Term") of this Agreement begins on the Effective Date, and ends on the 6-month anniversary of the Effective Date (subject to earlier termination as provided below). At the end of the Initial Term, this Agreement shall automatically be renewed for successive 6-month terms until terminated as provided below. Notwithstanding the foregoing, Lessee shall have the right to terminate this Agreement with or without cause on thirty (30) days written notice to Lessor. After the Initial Term, Lessor shall have the right to terminate this Agreement with or without cause on thirty (30) days written notice to Lessee; provided, however, this Agreement may be terminated on such shorter notice as may be required to comply with Applicable Law, the requirements of any financial institution, or insurance requirements.

4. **Payments**.

4.1. **Flight Charges**. Lessee shall pay Lessor for each flight conducted for Lessee under this Agreement an amount equal to the maximum amount of expense reimbursement permitted in accordance with Section 91.501(d) of the FAR, which expenses include and are limited to:

4.1.1. fuel oil, lubricants, and other additives;

4.1.2. travel expenses of the crew, including food, lodging and ground transportation;

4.1.3. hangar and tie down costs away from the Aircraft's base of operation;

4.1.4. insurance obtained for the specific flight;

4.1.5. landing fees, airport taxes and similar assessments;

4.1.6. customs, foreign permit, and similar fees directly related to the flight;

4.1.7. in-flight food and beverages;

4.1.8. passenger ground transportation;

4.1.9. flight planning and weather contract services; and

4.1.10. an additional charge equal to 100% of the expenses listed in Section 4.1.1.

4.2. **Invoices and Payment**. Lessor will initially pay all expenses related to the operation of the Aircraft in the ordinary course, provided that as soon as practicable after the last day of any calendar month during which any flight for the account of Lessee has been conducted, Lessor shall provide an invoice to Lessee for an amount determined in accordance with Section 4.1 above. Lessee shall remit the full amount of any such invoice, together with any applicable Taxes under Section 5, to Lessor promptly within thirty (30) days of receipt of the invoice. In the event Lessor has not received a supplier invoice for reimbursable charges relating to any such flight prior to such invoicing, Lessor shall re-compute the amount determined in accordance with Section 4.1 above and if an additional amount is due from Lessee to Lessor, issue a supplemental invoice for such charges to Lessee as soon as practicable after the date of receipt of such supplier invoice, and Lessee shall pay such supplemental invoice amount upon receipt thereof. Delinquent payments, defined as payments received more than thirty (30) days after receipt of invoice, to Lessor by Lessee hereunder shall bear interest at the Default Rate from the due date until the date of payment. Lessee shall further pay all costs incurred Lessor by in collecting any amounts due from

Lessee pursuant to the provisions of this Section 4.2 after delinquency, including court costs and reasonable attorneys' fees.

5. **Taxes**. None of the payments to be made by Lessee under Section 4 of this Agreement includes, and Lessee shall be responsible for, shall indemnify and hold harmless Lessor against, any Taxes which may be assessed or levied by any Taxing Jurisdiction as a result of the lease of the Aircraft to Lessee, or the use of the Aircraft by Lessee, or the provision of a taxable transportation service to that Lessee using the Aircraft. Without limiting the generality of the foregoing, Lessee and Lessor specifically acknowledge that all Lessee's flights will be subject to commercial air transportation excise taxes pursuant to Section 4261 of the Internal Revenue Code of 1986, as amended, regardless of whether any such flight is considered "noncommercial" under the FAR. Lessee shall remit to Lessor all such Taxes together with each payment made pursuant to Section 4.2.

6. **Scheduling Flights**.

6.1. **Submitting Flight Requests**. Lessee shall submit requests for flights and proposed flight schedules to Lessor as far in advance of any given flight as possible, preferably at least two (2) Business Days prior to Lessee's desired departure date. Requests for flights and proposed flight schedules shall be in a form, whether written or oral, mutually convenient to, and agreed upon by, Lessor and Lessee. In addition to requests for flights and proposed flight schedules, Lessee shall provide Lessor at least the following information for each proposed flight as soon as possible prior to scheduled departure:

6.1.1. departure airport;

6.1.2. destination airport;

6.1.3. date and time of outbound departure (including any multiple leg destinations);

6.1.4. the number of anticipated passengers and their names;

6.1.5. the nature and extent of luggage and/or cargo to be carried;

6.1.6. the date and time of return flight (including any multiple leg destinations), if any;

6.1.7. for international trips, passport information and Customs-required information for all passengers; and

6.1.8. any other information concerning the proposed flight that may be pertinent or required by Lessor's flight crew.

Until such time as Lessor notifies Lessee otherwise, all flight requests hereunder shall be submitted to the following representative of Lessor:

Travel Services

6.2. **Coordination of Flight Requests**. Each use of the Aircraft by Lessee shall be subject to Lessor's prior approval. Lessor will use reasonable efforts to accommodate Lessee's needs and avoid conflicts in scheduling; provided however, that Lessor shall not be liable to Lessee or any other person for loss, injury, or damage occasioned by any delay or failure to furnish the Aircraft, with a flight crew, pursuant to this Agreement for any reason. Lessor shall not be obligated to retain or contract for additional flight crew or maintenance personnel or equipment in order to accommodate a flight request submitted by Lessee.

6.3. **Subordinated Use of Aircraft**. Lessee's rights to schedule the use of the Aircraft shall at all times be subordinate to the Aircraft use requirements of Lessor, and any parent corporation, subsidiary or affiliate of Lessor ("Lessor Related Persons").

7. **Title and Operation**.

7.1. **Title and Registration**. Lessee acknowledges that title to the Aircraft shall remain vested in Owner, and Lessee undertakes, to the extent permitted by Applicable Law to do all such further acts, deeds, assurances, or things as may, in the reasonable opinion of Owner or Lessor, be necessary or desirable in order to protect or preserve Owner's title to the Aircraft. To the extent requested by Owner or Lessor, or their respective and assigns, Lessee shall take all action necessary to continue all rights and interests of Owner, and their respective successors or assigns in the Aircraft under Applicable Law against any claims of Lessee and any persons claiming by, through, or under Lessee.

7.2. **Aircraft Maintenance**. Lessor shall be solely responsible for maintenance, preventative maintenance, and required or otherwise necessary inspections of the Aircraft, and shall take such requirements into account in scheduling the Aircraft. No period of maintenance, preventative maintenance, or inspection shall be delayed or postponed for the purpose of scheduling the Aircraft, unless said maintenance or inspection can be safely conducted at a later time in compliance with all Applicable Law, and with the sound discretion of the Pilot in Command.

7.3. **Flight Crews**. Lessor shall provide to Lessee a qualified flight crew for each flight conducted in accordance with this Agreement. Lessor may, if it so chooses, elect not to hire its own pilots for any given flight hereunder, but to contract instead for pilot services from a third party. Whether or not the flight crew is supplied by a third party, the flight crew is under the exclusive command and control of Lessor in all phases of all flights conducted hereunder.

7.4. **OPERATIONAL CONTROL**. THE PARTIES EXPRESSLY AGREE THAT LESSOR SHALL HAVE AND MAINTAIN OPERATIONAL CONTROL OF THE AIRCRAFT FOR ALL FLIGHTS OPERATED UNDER THIS AGREEMENT, AND THAT THE INTENT OF THE PARTIES IS THAT THIS AGREEMENT CONSTITUTE A "TIME SHARING AGREEMENT" AS SUCH TERM IS DEFINED IN SECTION 91.501(C)(1) OF THE FAR. LESSOR SHALL EXERCISE EXCLUSIVE AUTHORITY OVER INITIATING, CONDUCTING, OR TERMINATING ANY FLIGHT CONDUCTED ON BEHALF OF LESSEE PURSUANT TO THIS AGREEMENT.

7.5. **Authority of Pilot in Command**. Notwithstanding that Lessor shall have Operational Control of the Aircraft during any flight conducted pursuant to this Agreement, Lessor and Lessee expressly agree that the Pilot in Command, in his or her sole discretion, may terminate any flight, refuse to commence any flight, or take any other flight-related action which in the judgment of the Pilot in Command is necessitated by considerations of safety. The Pilot in Command shall have final and complete authority to postpone or cancel any flight for any reason or condition which in his or her judgment would compromise the safety of the flight. No such action of the Pilot in Command shall create or support any liability of Lessor to Lessee for loss, injury, damage, or delay.

7.6. **Base of Operation**. For purposes of this Agreement, the base of operation is Teterboro Airport, New Jersey (KTEB); provided, however, that the base of operation for purposes of this Agreement may be changed temporarily or permanently by Lessor without notice. Lessor will make reasonable efforts to notify Lessee of changes in the base of operations at least forty-eight (48) hours prior to Lessee's scheduled flights.

7.7. **Force Majeure**. Lessor shall not be liable for delay or failure to furnish the Aircraft and flight crew pursuant to this Agreement when such failure is caused by government regulation or authority, mechanical difficulty, war, civil commotion, strikes or labor disputes, weather conditions, acts of God, or other unforeseen or unanticipated circumstances.

8. **Insurance and Limitation of Liability**. Lessor represents that the flight operations for the Aircraft as contemplated in this Agreement will be covered by the Lessor's aircraft all-risk physical damage insurance (hull coverage), aircraft bodily injury and property damage liability insurance. Lessor

will retain all rights and benefits with respect to the proceeds payable under policies of hull insurance maintained by Lessor that may be payable as a result of any incident or occurrence while an Aircraft is being operated on behalf of Lessee under this Agreement.

8.1. **Additional policy requirements**. Any policies of insurance carried in accordance with this Agreement and any policies taken out in substitution or replacement of any such policies shall:

8.1.1. name Lessee as an additional insured;

8.1.2. include a severability of interest clause providing that such policy shall operate in the same manner as if there were a separate policy covering each insured;

8.1.3. shall be primary, without right of contribution from any other insurance maintained by Lessee; and

8.1.4. as respects hull physical damage, waive any right of set off or subrogation against Lessee.

8.2. **Limitation of Liability**. Lessee agrees that the insurance specified in this Section 8 provides its sole recourse for all claims, losses, liabilities, obligations, demands, suits, judgments or causes of action, penalties, fines, costs and expenses of any nature whatsoever, including attorneys' fees and expenses for or on account of or arising out of, or in any way connected with the use of the Aircraft by Lessee or its guests, including injury to or death of any persons, including Lessee and its guests which may result from or arise out of the use or operation of the Aircraft during the term of this Agreement ("Claims"), regardless of whether such Claims arise out of or are caused by, in whole or in part, the negligence, gross negligence, or strict liability of Lessor.

8.3. In no event shall Lessor be liable to Lessee or his employees, agents, representatives, guests, or invitees for any claims or liabilities, including property damage or injury and death, and expenses, including attorney's fees, in excess of the amount paid by Lessor's insurance carrier in the event of such loss.

8.4. Upon request, the Lessor shall deliver to Lessee a certificate of insurance evidencing the insurance required to be maintained by Lessor under this Article.

8.5. This Section shall survive termination of this Agreement.

9. **Representations and Warranties**. Lessee represents and warrants that Lessee shall:

9.1. use the Aircraft solely for and on account of his own business or personal use only, and will not use the Aircraft for the purpose of providing transportation of passengers or cargo for compensation or hire, for or in connection with any illegal purpose, in violation of any Applicable Law, or in violation of any insurance policy with respect to Aircraft;

9.2. refrain from incurring any mechanic's or other lien in connection with inspection, preventative maintenance, maintenance, or storage of the Aircraft, whether permissible or impermissible under this Agreement;

9.3. not attempt to convey, mortgage, assign, lease, lease, or in any way alienate the Aircraft or create any kind of lien or security interest involving the Aircraft, or do anything or take any action that might mature into such a lien; and

9.4. abide by and conform, during the Term, to all Applicable Laws, governmental and airport orders, rules and regulations, as shall from time to time be in effect relating in any way to the operation and use of the Aircraft by Lessee.

10. **Miscellaneous**.

10.1. **Notices**. All notices hereunder (except for notices made purely for flight scheduling, which are governed by the provisions of Section 6) shall be delivered by hand, sent by reputable guaranteed overnight delivery service, or sent by first-class United States mail, certified, postage prepaid, return receipt requested to the addresses of the parties set forth below:

If to Lessor:

James J. Killerlane III
Corporate Secretary, Managing Director and Deputy General Counsel
240 Greenwich Street, 18th Floor
New York, NY 10286
T: ###-###-####

If to Lessee:

Robin Vince
240 Greenwich Street
New York, NY 10286
T: ###-###-####

Notice shall be deemed given when delivered or sent in the manner provided herein. At any time, either party may change its address for purposes of notices under this Agreement by giving notice to the other party in accordance herewith.

10.2. **No Waiver**. No purported waiver by either party of any default by the other party of any term or provision contained herein shall be deemed to be a waiver of such term or provision unless the waiver is in writing and signed by the waiving party. No such waiver shall in any event be deemed a waiver or any subsequent default under the same or any other term or provision contained herein.

10.3. **Entire Agreement**. This Agreement sets forth the entire understanding between the parties concerning the subject matter of this Agreement and incorporates all prior negotiations and understandings. There are no covenants, promises, agreements, conditions or understandings, either oral or written, between them relating to the subject matter of this Agreement other than those set forth herein. No representation or warranty has been made by or on behalf of any party (or any officer, director, employee, or agent thereof) to induce any other party to enter into this Agreement or to abide by or consummate any transaction contemplated by any timers of this Agreement, except representations and warranties, if any, expressly set forth herein. No alteration, amendment, change, or addition to this Agreement shall be binding upon either party unless in writing and signed by the party to be charged.

10.4. **No Agency or Partnership**. Nothing contained in this Agreement shall be deemed or construed by the parties hereto or by any third person to create the relationship of principal and agent or of partnership or of joint venture.

10.5. **Successors and Assigns**. Each and all of the provisions of this Agreement shall be binding upon and inure to the benefit of the parties hereto, and except as otherwise specifically provided in this Agreement, their respective successors and assigns, provided, however, that neither this Agreement, nor any rights herein granted may be assigned, transferred, or encumbered by Lessee, and any purported or attempted transfer or assignment by Lessee without the prior express written consent of Lessor shall be void and of no effect.

10.6. **Third Parties**. Nothing herein expressed or implied is intended or shall be construed to confer upon or give any person other than the parties hereto and their successors and assigns any rights or remedies under or by reason of this Agreement.

10.7. **Captions; Recitals**. The captions and section numbers appearing in this Agreement are inserted only as a matter of convenience. The captions and section numbers do not define, limit, construe, or describe the scope or intent of the provisions of this Agreement. The Recitals at the beginning of this

Agreement are intended to give an understanding of the factual background that led the parties to enter into this Agreement. The Recitals are not intended to be warranties, representations, covenants, or otherwise contractually binding.

10.8. **Prohibited or Unenforceable Provisions**. Any provision of this Agreement which is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions hereof. To the extent permitted by Applicable Law, each of Lessor and Lessee hereby waives any provision of Applicable Law which renders any provision hereof prohibited or unenforceable in any respect.

10.9. **Governing Law**. The Agreement shall be governed and construed by the provisions hereof and in accordance with the laws of the State of New York applicable to agreements to be performed in the State of New York, without giving effect to its conflict of laws provisions. Any disputes arising out of this Agreement will be subject to the exclusive jurisdiction of the U.S. District Court located in New York County, New York if federal jurisdiction is available and to the courts of the State of New York if federal jurisdiction is not available.

10.10. **Counterparts**. This Agreement may be executed in one or more counterparts, each of which will be deemed an original and part of one and the same document.

11. **Required Filings**. Lessee authorizes Lessor at any time, and from time to time, to file any such document with the FAA and/or such other governmental agencies or offices as Lessor shall judge to be necessary or desirable in the name of, and on behalf of, Lessee, which authorization and power is coupled with an interest and shall be irrevocable.

12. **Disclaimer**. The Aircraft is being leased by Lessor to Lessee hereunder on a completely "as is, where is" basis, which is acknowledged and agreed to by Lessee. The warranties and representations set forth in this Agreement are exclusive and in lieu of all other representations or warranties whatsoever, express or implied, and Lessor has not made and shall not be construed or deemed to have made (whether by virtue of having leased the Aircraft under this Agreement, having leased the Aircraft from Lessor, having done or failed to do any act, or having acquired or failed to acquire any status under or in relation to this Agreement or otherwise) any other representation or warranty whatsoever, express or implied, with respect to the Aircraft or to any Part thereof, and specifically, without limitation, in this respect disclaims all representations and warranties concerning the title, airworthiness, value, condition, design, merchantability, compliance with specifications, construction and condition of the Aircraft, or fitness for a particular use of the Aircraft, and as to the absence of latent and other defects, whether or not discoverable, and as to the absence of any infringement or the like hereunder of any patent, trademark, or copyright, and as to the absence of obligations based on strict liability in tort, or as to the quality of the material or workmanship of the Aircraft or any part thereof, or any other representation or warranty whatsoever, express or implied (including any implied warranty arising from a course of performance, dealing, or usage of trade), with respect to the Aircraft or any Part thereof.

Lessee hereby waives, releases, disclaims and renounces all expectation of or reliance upon any such and other warranties, obligations, and liabilities of Lessor and rights, claims, and remedies of Lessee against Lessor express or implied, arising by law or otherwise, including but not limited to: (i) any implied warranty of merchantability or fitness for any particular use; (ii) any implied warranty arising from course of performance, course of dealing, or usage of trade; (iii) any obligation, liability, right, claim, or remedy in tort, whether or not arising from the negligence of Lessor, actual or imputed; and (iv) any obligation, liability, right, claim, or remedy for loss of or damage to the Aircraft, for loss of use, revenue, or profit with respect to the Aircraft, or for any other direct, indirect, incidental, or consequential damages.

13. **Truth in Leasing Disclosures**.

13.1. The parties hereto certify that a true copy of this Agreement shall be carried on the Aircraft at all times and shall be made available for inspection upon request by an appropriately constituted and identified representative of the Administrator of the FAA.

13.2. Lessor shall, for and on behalf of Lessor and Lessee, mail a copy of this Agreement by certified mail, return receipt requested, to: Federal Aviation Administration, Aircraft Registration Branch, Attn: Technical Section, P.O. Box 25724, Oklahoma City, Oklahoma 73125, within twenty-four (24) hours after execution of this Agreement.

13.3. At least forty-eight (48) hours before the first flight under this Agreement, Lessor shall, for and on behalf of Lessor and Lessee, comply with the notification requirements of Section 91.23(c)(3) of the FAR by notifying by telephone or in person the responsible Flight Standards office nearest the airport where such first flight will originate of the following: (i) the location of the airport of departure, (ii) the departure time, and (iii) the registration number of the Aircraft.

13.4. WITHIN THE TWELVE (12) MONTH PERIOD PRECEDING THE EFFECTIVE DATE, EXCEPT TO THE EXTENT THE AIRCRAFT IS LESS THAN TWELVE (12) MONTHS OLD, THE AIRCRAFT HAVE BEEN INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE FOLLOWING PROVISIONS OF FAR: FAR 91.409(F)(3) – A CURRENT INSPECTION PROGRAM RECOMMENDED BY THE MANUFACTURER.

13.5. THE PARTIES HERETO CERTIFY THAT, DURING THE TERM OF THIS AGREEMENT AND FOR ALL OPERATIONS CONDUCTED HEREUNDER, THE AIRCRAFT WILL BE MAINTAINED AND INSPECTED IN ACCORDANCE WITH THE PROVISIONS OF FAR 91.409(F)(3).

13.6. LESSOR, WHOSE ADDRESS APPEARS IN SECTION 10.1 ABOVE AND WHOSE AUTHORIZED SIGNATURE APPEARS BELOW, SHALL HAVE AND RETAIN OPERATIONAL CONTROL OF THE AIRCRAFT DURING ALL OPERATIONS CONDUCTED PURSUANT TO THIS AGREEMENT. EACH PARTY HERETO CERTIFIES THAT IT UNDERSTANDS THE EXTENT OF ITS RESPONSIBILITIES SET FORTH HEREIN FOR COMPLIANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS. AN EXPLANATION OF FACTORS BEARING ON OPERATIONAL CONTROL AND PERTINENT FEDERAL AVIATION REGULATIONS CAN BE OBTAINED FROM THE RESPONSIBLE FLIGHT STANDARDS OFFICE.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed effective as of the date first above written.

LESSOR:

The Bank of New York Mellon

By: /s/ James J. Killerlane III
Name: James J. Killerlane III
Title: Corporate Secretary, Managing Director and Deputy General Counsel

LESSEE:

Robin Vince

By: /s/ Robin Vince
Name: Robin Vince
Title: Chief Executive Officer

SCHEDULE 1

AIRCRAFT DESCRIPTION

Dassault model Falcon 2000EX bearing aircraft registration number N84SV and serial MSN 291, with two (2) Pratt & Whitney Canada model PW308C Series engines bearing manufacturer's serial numbers PCE-CF0727 and PCE-CF0726.

Invoice Template

To:
Date Of Invoice:
Invoice Number:

Pursuant to United States of America Federal Aviation Regulations 91.501(c)(1) and 91.501(d), please reimburse the following expenses associated with the _____ 2023 flight of the Dassault model Falcon 2000EX, serial number 291, registration number N84SV operated by _____ from _____ to _____ with _____ passengers aboard.

Item of Expense	US$
1. Fuel, oil, lubricants, and other additives used: (Gallons x price of fuel) + cost of lubricants/additives = Y x 2 =	
2. Crew travel, lodging, food, and ground transportation expenses:	
3. Hangar/Tie Down costs in _____:	
4. Landing Fees/Airport Taxes:	
5. Customs Fees:	
6. Catering:	
7. Passenger ground transportation:	
8. Flight Planning and weather contract services for flight:	
9. Insurance obtained for the specific (above-described) flight:	
SUBTOTAL:	
FEDERAL EXCISE TAX:	
TOTAL DUE FOR FLIGHT:	

NOTE FOR USE OF INVOICE TEMPLATE
[Items #2, 3, and 9 include only those charges incurred away from base, and may not include pro-rated pilot salaries, benefits, pro-rated insurance costs, etc.]
Federal Excise Tax is typically 7.5%, plus a nominal per-passenger segment fee, and must be remitted for all "Timeshare" flights, irrespective of whether you elect to collect it from the user.

The Federal Excise Tax can be calculated as follows:

Number of Passengers(____ x 4.50[1]) x __ flight segments: _____
plus SUBTOTAL x 7.5%: _____

Total Federal Excise Tax: _____

[1] The per-segment "head tax" is subject to change, and will vary depending on whether the flight is USA domestic or international.

Exhibit 13.1

FINANCIAL SECTION

THE BANK OF NEW YORK MELLON CORPORATION
2022 Annual Report
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The Bank of New York Mellon Corporation (and its subsidiaries)

Financial Summary

(dollars in millions, except per share amounts and unless otherwise noted)		**2022**		2021		2020
Selected income statement information:						
Fee and other revenue	**$**	**12,873**	$	13,313	$	12,831
Net interest revenue		**3,504**		2,618		2,977
Total revenue		**16,377**		15,931		15,808
Provision for credit losses		**39**		(231)		336
Noninterest expense		**13,010**		11,514		11,004
Income before income taxes		**3,328**		4,648		4,468
Provision for income taxes		**768**		877		842
Net income		**2,560**		3,771		3,626
Net loss (income) attributable to noncontrolling interests related to consolidated investment management funds		**13**		(12)		(9)
Preferred stock dividends		**(211)**		(207)		(194)
Net income applicable to common shareholders of The Bank of New York Mellon Corporation	**$**	**2,362**	$	3,552	$	3,423
Earnings per share applicable to common shareholders of The Bank of New York Mellon Corporation:						
Basic	**$**	**2.91**	$	4.17	$	3.84
Diluted	**$**	**2.90**	$	4.14	$	3.83
Average common shares and equivalents outstanding *(in thousands)*:						
Basic		**811,068**		851,905		890,839
Diluted		**814,795**		856,359		892,514
At Dec. 31						
Assets under custody and/or administration ("AUC/A") *(in trillions) (a)*	**$**	**44.3**	$	46.7	$	41.1
Assets under management ("AUM") *(in billions) (b)*		**1,836**		2,434		2,211
Selected ratios:						
Return on common equity		**6.5 %**		8.9 %		8.7 %
Return on tangible common equity – Non-GAAP *(c)*		**13.4**		17.1		17.0
Pre-tax operating margin		**20**		29		28
Net interest margin		**0.97**		0.68		0.84
Cash dividends per common share	**$**	**1.42**	$	1.30	$	1.24
Common dividend payout ratio		**49 %**		32 %		33 %
Common dividend yield		**3.1 %**		2.2 %		2.9 %
At Dec. 31						
Closing stock price per common share	**$**	**45.52**	$	58.08	$	42.44
Market capitalization	**$**	**36,800**	$	46,705	$	37,634
Book value per common share	**$**	**44.40**	$	47.50	$	46.53
Tangible book value per common share – Non-GAAP *(c)*	**$**	**23.11**	$	24.31	$	25.44
Full-time employees		**51,700**		49,100		48,500
Common shares outstanding *(in thousands)*		**808,445**		804,145		886,764
Regulatory capital ratios *(d)*						
Common Equity Tier 1 ("CET1") ratio		**11.2 %**		11.2 %		13.1 %
Tier 1 capital ratio		**14.1**		14.0		15.8
Total capital ratio		**14.9**		14.9		16.7
Tier 1 leverage ratio		**5.8**		5.5		6.3
Supplementary leverage ratio ("SLR") *(e)*		**6.8**		6.6		8.6

(a) Consists of AUC/A primarily from the Asset Servicing line of business and, to a lesser extent, the Clearance and Collateral Management, Issuer Services, Pershing and Wealth Management lines of business. Includes the AUC/A of CIBC Mellon Global Securities Services Company ("CIBC Mellon"), a joint venture with the Canadian Imperial Bank of Commerce, of $1.5 trillion at Dec. 31, 2022, $1.7 trillion at Dec. 31, 2021 and $1.5 trillion at Dec. 31, 2020.

(b) Excludes assets managed outside of the Investment and Wealth Management business segment.

(c) Return on tangible common equity and tangible book value per common share, both Non-GAAP measures, exclude goodwill and intangible assets, net of deferred tax liabilities. See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of these Non-GAAP measures.

(d) For our CET1, Tier 1 and Total capital ratios, our effective capital ratios under U.S. capital rules are the lower of the ratios as calculated under the Standardized and Advanced Approaches. For additional information on our regulatory capital ratios, see "Capital" beginning on page 40.

(e) The consolidated SLR at Dec. 31, 2020 reflects the temporary exclusion of U.S. Treasury securities from total leverage exposure which increased our consolidated SLR by 72 basis points. The temporary exclusion ceased to apply beginning April 1, 2021.

General

In this Annual Report, references to "our," "we," "us," "BNY Mellon," the "Company" and similar terms refer to The Bank of New York Mellon Corporation and its consolidated subsidiaries. The term "Parent" refers to The Bank of New York Mellon Corporation but not its subsidiaries.

The following should be read in conjunction with the Consolidated Financial Statements included in this report. BNY Mellon's actual results of future operations may differ from those estimated or anticipated in certain forward-looking statements contained herein due to the factors described under the headings "Forward-looking Statements" and "Risk Factors," both of which investors should read.

Certain business terms used in this Annual Report are defined in the Glossary.

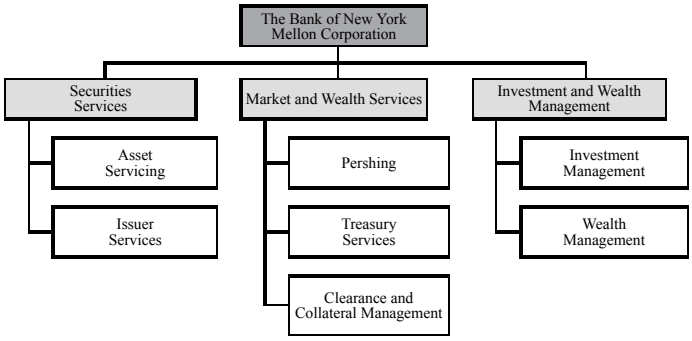
This Annual Report generally discusses 2022 and 2021 items and comparisons between 2022 and 2021. Discussions of 2020 items and comparisons between 2021 and 2020 that are not included in this Annual Report can be found in our 2021 Annual Report, which was filed as an exhibit to our Form 10-K for the year ended Dec. 31, 2021.

Overview

Established in 1784 by Alexander Hamilton, we were the first company listed on the New York Stock Exchange (NYSE: BK). With a history of more than 235 years, BNY Mellon is a global company dedicated to helping its clients manage and service their financial assets throughout the investment life cycle. Whether providing financial services for institutions, corporations or individual investors, BNY Mellon delivers informed investment and wealth management and investment services in 35 countries.

BNY Mellon has three business segments, Securities Services, Market and Wealth Services and Investment and Wealth Management, which offer a comprehensive set of capabilities and deep expertise across the investment lifecycle, enabling the Company to provide solutions to buy-side and sell-side market participants, as well as leading institutional and wealth management clients globally.

The diagram below presents our three business segments and lines of business, with the remaining operations in the Other segment.



For additional information on our business segments, see "Review of business segments" and Note 24 of the Notes to Consolidated Financial Statements.

Key 2022 events

Alcentra

On Nov. 1, 2022, we completed the sale of BNY Alcentra Group Holdings, Inc. (together with its subsidiaries, "Alcentra"). At Oct. 31, 2022, Alcentra had $32 billion in AUM concentrated in senior secured loans, high yield bonds, private credit, structured credit, special situations and multi-strategy credit strategies.

Repositioning the securities portfolio

In the fourth quarter of 2022, we took actions to reposition the securities portfolio to improve the trajectory of our net interest revenue. We sold approximately $3 billion of longer-dated lower yielding municipal and corporate bonds. These securities were replaced with significantly higher yielding securities. As a result of the repositioning, we recorded net securities losses of $449 million (pre-tax) in investment and other revenue.

Goodwill impairment

In the third quarter of 2022, we recorded a $680 million impairment of the goodwill associated with the Investment Management reporting unit, which

was driven by lower market values and a higher discount rate. This goodwill impairment represents a non-cash charge and did not affect BNY Mellon's liquidity position, tangible common equity or regulatory capital ratios. See "Critical accounting estimates" for additional information.

Leadership succession

In March 2022, Todd Gibbons announced his decision to retire as Chief Executive Officer ("CEO") and member of the Board of Directors effective Aug. 31, 2022. The Board of Directors appointed Robin Vince to the position of President and CEO after Mr. Gibbons retired. Since 2020, Mr. Vince had served as Vice Chair of BNY Mellon and CEO of Global Market Infrastructure, which includes BNY Mellon's Pershing, Treasury Services, and Clearance and Collateral Management lines of business, as well as Markets & Execution Services.

Dermot McDonogh joined BNY Mellon on Nov. 1, 2022, and effective Feb. 1, 2023, succeeded Emily Portney as the Chief Financial Officer ("CFO"). Ms. Portney served as the CFO since July 19, 2020, and has assumed a new position leading the Company's Asset Servicing business.

Summary of financial highlights

We reported net income applicable to common shareholders of $2.4 billion, or $2.90 per diluted common share, in 2022, including the negative impact of notable items. Notable items in 2022 include goodwill impairment in the Investment Management reporting unit, a net loss from repositioning the securities portfolio, severance expense, litigation reserves, the accelerated amortization of deferred costs for depositary receipts services related to Russia and net gains on disposals (reflected in investment and other revenue). Excluding notable items, net income applicable to common shareholders was $3.7 billion (Non-GAAP), or $4.59 (Non-GAAP) per diluted common share, in 2022. In 2021, net income applicable to common shareholders of BNY Mellon was $3.6 billion, or $4.14 per diluted common share, including the negative impact of notable items. Notable items in 2021 include litigation reserves, severance expense and net gains on disposals (reflected in investment and other revenue). Excluding notable items, net income applicable to common shareholders was $3.6 billion (Non-GAAP), or $4.24 (Non-GAAP) per diluted common share, in 2021.

The highlights below are based on 2022 compared with 2021, unless otherwise noted.

- Total revenue increased 3%, or 6% (Non-GAAP) excluding notable items, primarily reflecting:
  - Fee revenue was essentially flat primarily reflecting lower market values, the unfavorable impact of a stronger U.S. dollar and the accelerated amortization of deferred costs for depositary receipts services related to Russia, partially offset by lower money market fee waivers. (See "Fee and other revenue" beginning on page 6.)
  - Investment and other revenue decreased, primarily reflecting the net loss from repositioning the securities portfolio. (See "Fee and other revenue" beginning on page 6.)
  - Net interest revenue increased 34%, primarily driven by higher interest rates on interest-earning assets, partially offset by higher funding expense. (See "Net interest revenue" beginning on page 9.)
- The provision for credit losses was $39 million compared with a benefit of $231 million. The increase was primarily driven by changes in the macroeconomic environment forecast. (See "Allowance for credit losses" beginning on page 34.)
- Noninterest expense increased 13%, primarily reflecting the goodwill impairment in the Investment Management reporting unit and higher severance expense and litigation reserves. Excluding notable items, noninterest expense increased 5% (Non-GAAP), primarily reflecting higher investments in growth, infrastructure and efficiency initiatives and higher revenue-related expenses, as well as the impact of inflation, partially offset by an approximately 3% favorable impact of a stronger U.S. dollar. (See "Noninterest expense" on page 12.)
- Effective tax rate of 23.1%, or 19.1% excluding notable items (Non-GAAP), primarily goodwill impairment, in 2022. (See "Income taxes" on page 12.)
- Return on common equity ("ROE") was 6.5% for 2022. Excluding notable items, the adjusted ROE was 10.3% (Non-GAAP) for 2022.

- Return on tangible common equity ("ROTCE") was 13.4% (Non-GAAP) for 2022. Excluding notable items, the adjusted ROTCE was 21.0% (Non-GAAP) for 2022.

See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of the Non-GAAP measures.

Metrics

- AUC/A totaled $44.3 trillion at Dec. 31, 2022 compared with $46.7 trillion at Dec. 31, 2021. The 5% decrease primarily reflects lower market values and the unfavorable impact of a stronger U.S. dollar, partially offset by client inflows and net new business. (See "Fee and other revenue" beginning on page 6.)
- AUM totaled $1.8 trillion at Dec. 31, 2022 compared with $2.4 trillion at Dec. 31, 2021. The 25% decrease primarily reflects lower market values, the unfavorable impact of a stronger U.S. dollar and the divestiture of Alcentra, partially offset by net inflows. (See "Investment and Wealth Management business segment" beginning on page 18.)

Capital and liquidity

- Our CET1 ratio calculated under the Advanced Approaches was 11.2% at Dec. 31, 2022 and 11.2% under the Standardized Approach at Dec. 31, 2021. This primarily reflects capital generated through earnings, lower risk-weighted assets ("RWAs") and the impact of the Alcentra sale, offset by the net decrease in accumulated other comprehensive income and capital deployed through dividends. (See "Capital" beginning on page 40.)
- Our Tier 1 leverage ratio was 5.8% at Dec. 31, 2022, compared with 5.5% at Dec. 31, 2021. The increase reflects lower average assets, partially offset by a decrease in capital. (See "Capital" beginning on page 40.)

Highlights of our principal business segments

Securities Services

- Total revenue increased 11%.
- Income before taxes increased 13%.
- Pre-tax operating margin of 21%.

Market and Wealth Services

- Total revenue increased 11%.
- Income before taxes increased 10%.
- Pre-tax operating margin of 44%.

Investment and Wealth Management

- Total revenue decreased 12%.
- Income before taxes decreased 96%; or 39% excluding notable items (Non-GAAP).
- Pre-tax operating margin of 1%; adjusted pre-tax operating margin of 24% excluding notable items (Non-GAAP).

See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of the Non-GAAP measures. See "Review of business segments" and Note 24 of the Notes to Consolidated Financial Statements for additional information on our business segments.

Fee and other revenue

Fee and other revenue				**2022 vs.**	2021 vs.
(dollars in millions, unless otherwise noted)	**2022**	2021	2020	**2021**	2020
Investment services fees	**$ 8,529**	$ 8,284	$ 8,047	**3 %**	3 %
Investment management and performance fees *(a)*	**3,299**	3,588	3,367	**(8)**	7
Foreign exchange revenue	**822**	799	774	**3**	3
Financing-related fees	**175**	194	212	**(10)**	(8)
Distribution and servicing fees	**130**	112	115	**16**	(3)
Total fee revenue	**12,955**	12,977	12,515	—	4
Investment and other revenue	**(82)**	336	316	**N/M**	N/M
Total fee and other revenue	**$ 12,873**	$ 13,313	$ 12,831	**(3)%**	4 %
Fee revenue as a percentage of total revenue	**79 %**	81 %	79 %		
AUC/A at period end *(in trillions) (b)*	**$ 44.3**	$ 46.7	$ 41.1	**(5)%**	14 %
AUM at period end *(in billions) (c)*	**$ 1,836**	$ 2,434	$ 2,211	**(25)%**	10 %

(a) Excludes seed capital gains (losses) related to consolidated investment management funds.
(b) Consists of AUC/A primarily from the Asset Servicing line of business and, to a lesser extent, the Clearance and Collateral Management, Issuer Services, Pershing and Wealth Management lines of business. Includes the AUC/A of CIBC Mellon of $1.5 trillion at Dec. 31, 2022, $1.7 trillion at Dec. 31, 2021 and $1.5 trillion at Dec. 31, 2020.
(c) Excludes assets managed outside of the Investment and Wealth Management business segment.
N/M – Not meaningful.

Fee revenue was essentially flat compared with 2021, primarily reflecting lower market values, the unfavorable impact of a stronger U.S. dollar and the accelerated amortization of deferred costs for depositary receipts services related to Russia in the first quarter of 2022, partially offset by lower money market fee waivers.

Investment and other revenue decreased $418 million in 2022 compared with 2021, primarily reflecting the net loss from repositioning the securities portfolio.

Money market fee waivers

In recent years, low short-term interest rates resulted in money market mutual fund fees and other similar fees being waived to protect investors from negative returns. The fee waivers impacted fee revenues in most of our businesses, but also resulted in lower distribution and servicing expense. Money market fee waivers are highly sensitive to changes in short-term interest rates and, due to increases in interest rates in the second half of 2022, have abated.

The following table presents the impact of money market fee waivers on our consolidated fee revenue, net of distribution and servicing expense. In 2022, the net impact of money market fee waivers was $306 million, down from $916 million in 2021, driven by higher interest rates.

Money market fee waivers			
(in millions)	**2022**	2021	2020
Investment services fees (see table below)	**$ (153)**	$ (547)	$ (209)
Investment management and performance fees	**(165)**	(429)	(142)
Distribution and servicing fees	**(13)**	(51)	(17)
Total fee revenue	**(331)**	(1,027)	(368)
Less: Distribution and servicing expense	**25**	111	31
Net impact of money market fee waivers	**$ (306)**	$ (916)	$ (337)
Impact to investment services fees by line of business *(a):*			
Asset Servicing	**$ (19)**	$ (105)	$ (10)
Issuer Services	**(12)**	(62)	(9)
Pershing	**(116)**	(343)	(186)
Treasury Services	**(6)**	(37)	(4)
Total impact to investment services fees by line of business	**$ (153)**	$ (547)	$ (209)
Impact to fee revenue by line of business *(a):*			
Asset Servicing	**$ (29)**	$ (176)	$ (18)
Issuer Services	**(16)**	(83)	(13)
Pershing	**(137)**	(401)	(227)
Treasury Services	**(8)**	(52)	(6)
Investment Management	**(139)**	(303)	(100)
Wealth Management	**(2)**	(12)	(4)
Total impact to fee revenue by line of business	**$ (331)**	$ (1,027)	$ (368)

(a) The line of business revenue for management reporting purposes reflects the impact of revenue transferred between the businesses.

Investment services fees

Investment services fees increased 3% compared with 2021, primarily reflecting lower money market fee waivers and higher client activity, partially offset by the impact of prior year lost business in Pershing and Corporate Trust, the unfavorable impact of a stronger U.S. dollar, lower market values and the accelerated amortization of deferred costs for depositary receipts services related to Russia in the first quarter of 2022.

AUC/A totaled $44.3 trillion at Dec. 31, 2022, a decrease of 5% compared with Dec. 31, 2021, primarily reflecting lower market values and the unfavorable impact of a stronger U.S. dollar, partially offset by client inflows and net new business. AUC/A consisted of 33% equity securities and 67% fixed-income securities at Dec. 31, 2022 and 37% equity securities and 63% fixed-income securities at Dec. 31, 2021.

See "Securities Services business segment" and "Market and Wealth Services business segment" in "Review of business segments" for additional details.

Investment management and performance fees

Investment management and performance fees decreased 8% compared with 2021, primarily reflecting lower market values, the unfavorable impact of a stronger U.S. dollar, the mix of cumulative net inflows, the impact of the Alcentra divestiture and lower equity income, partially offset by lower money market fee waivers. Performance fees were $75 million in 2022 and $107 million in 2021. On a constant currency basis (Non-GAAP), investment management and performance fees decreased 4% compared with 2021. See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of Non-GAAP measures.

AUM was $1.8 trillion at Dec. 31, 2022, a decrease of 25% compared with Dec. 31, 2021, primarily reflecting lower market values, the unfavorable impact of a stronger U.S. dollar and the divestiture of Alcentra, partially offset by net inflows.

See "Investment and Wealth Management business segment" in "Review of business segments" for additional details regarding the drivers of investment management and performance fees, AUM and AUM flows.

Foreign exchange revenue

Foreign exchange revenue is primarily driven by the volume of client transactions and the spread realized on these transactions, both of which are impacted by market volatility, the impact of foreign currency hedging activities and foreign currency remeasurement gain (loss). In 2022, foreign exchange revenue increased 3% compared with 2021, primarily reflecting higher volatility, partially offset by lower volumes. Foreign exchange revenue is primarily reported in the Securities Services business segment and, to a lesser extent, the Market and Wealth Services and Investment and Wealth Management business segments and the Other segment.

Financing-related fees

Financing-related fees, which are primarily reported in the Market and Wealth Services and Securities Services business segments, include capital market fees, loan commitment fees and credit-related fees. Financing-related fees decreased 10% in 2022 compared with 2021, primarily reflecting lower capital market fees, including underwriting fees.

Distribution and servicing fees

Distribution and servicing fees earned from mutual funds are primarily based on average assets in the funds and the sales of funds that we manage or administer, and are primarily reported in the Investment Management business. These fees, which include 12b-1 fees, fluctuate with the overall level of net sales, the relative mix of sales between share classes, the funds' market values and money market fee waivers.

Distribution and servicing fees were $130 million in 2022 compared with $112 million in 2021, driven by lower money market fee waivers. The impact of distribution and servicing fees on income in any one period is partially offset by distribution and servicing expense paid to other financial intermediaries to cover their costs for distribution and servicing of mutual funds. Distribution and servicing expense is recorded as noninterest expense on the income statement.

Investment and other revenue

Investment and other revenue includes income or loss from consolidated investment management funds, seed capital gains or losses, other trading revenue or loss, renewable energy investments losses, income from corporate and bank-owned life insurance contracts, other investment gains or losses, gains or losses from disposals, expense reimbursements from our CIBC Mellon joint venture, other income or loss and net securities gains or losses. The income or loss from consolidated investment management funds should be considered together with the net income or loss attributable to noncontrolling interests, which reflects the portion of the consolidated funds for which we do not have an economic interest and is reflected below net income as a separate line item on the consolidated income statement. Other trading revenue or loss primarily includes the impact of market-risk hedging activity related to our seed capital investments in investment management funds, non-foreign currency derivative and fixed income trading, and other hedging activity. Investments in renewable energy generate losses in investment and other revenue that are more than offset by benefits and credits recorded to the provision for income taxes. Other investment gains or losses includes fair value changes of non-readily marketable strategic equity, private equity and other investments. Expense reimbursements from our CIBC Mellon joint venture relate to expenses incurred by BNY Mellon on behalf of the CIBC Mellon joint venture. Other income includes various miscellaneous revenues.

The following table provides the components of investment and other revenue.

Investment and other revenue *(in millions)*	**2022**	2021	2020
(Loss) income from consolidated investment management funds	**$ (42)**	$ 32	$ 84
Seed capital (losses) gains *(a)*	**(37)**	40	23
Other trading revenue	**149**	6	13
Renewable energy investment (losses)	**(164)**	(201)	(129)
Corporate/bank-owned life insurance	**128**	140	148
Other investment gains *(b)*	**159**	159	35
Disposal gains (losses)	**26**	13	(61)
Expense reimbursements from joint venture	**108**	96	85
Other income	**34**	46	85
Net securities (losses) gains	**(443)** *(c)*	5	33
Total investment and other revenue	**$ (82)**	$ 336	$ 316

(a) Includes gains (losses) on investments in BNY Mellon funds which hedge deferred incentive awards.
(b) Includes strategic equity, private equity and other investments.
(c) Includes a net loss of $449 million related to the repositioning of the securities portfolio.

Investment and other revenue was a loss of $82 million in 2022 compared with revenue of $336 million in 2021. The decrease primarily reflects the net loss from repositioning the securities portfolio.

Net interest revenue

Net interest revenue					**2022**	2021
					vs.	vs.
(dollars in millions)	**2022**	2021	2020	**2021**	2020
Net interest revenue	**$ 3,504**	$ 2,618	$ 2,977	**34 %**	(12)%
Add: Tax equivalent adjustment	**11**	13	9	**N/M**	N/M
Net interest revenue on a fully taxable equivalent ("FTE") basis – Non-GAAP *(a)*	**$ 3,515**	$ 2,631	$ 2,986	**34 %**	(12)%
Average interest-earning assets	**$ 362,180**	$ 387,023	$ 354,526	**(6)%**	9 %
Net interest margin	**0.97 %**	0.68 %	0.84 %	**29 bps**	(16) bps
Net interest margin (FTE) – Non-GAAP *(a)*	**0.97 %**	0.68 %	0.84 %	**29 bps**	(16) bps

(a) Net interest revenue (FTE) – Non-GAAP and net interest margin (FTE) – Non-GAAP include the tax equivalent adjustments on tax-exempt income which allows for comparisons of amounts arising from both taxable and tax-exempt sources and is consistent with industry practice. The adjustment to an FTE basis has no impact on net income.

N/M – Not meaningful.

bps – basis points.

Net interest revenue increased 34% compared with 2021, primarily reflecting higher interest rates on interest-earning assets, partially offset by higher funding expense.

Net interest margin increased 29 basis points compared with 2021. The increase primarily reflects the factors mentioned above.

Average interest-earning assets decreased 6% compared with 2021. The decrease primarily reflects lower interest-bearing deposit assets and lower securities balances, partially offset by higher loan balances.

Average non-U.S. dollar deposits comprised approximately 25% of our average total deposits in 2022 and 2021. Approximately 40% of the average non-U.S. dollar deposits in 2022 and 2021 were euro-denominated.

Net interest revenue in future periods will depend on the level and mix of client deposits and deposit rates, as well as the level and shape of the yield curve. Based on the market implied forward interest rates as of the reporting date, we expect net interest revenue for the year ended Dec. 31, 2023 to increase when compared to the year ended Dec. 31, 2022.

Average balances and interest rates	2022			2021		
(dollars in millions)	**Average balance**	**Interest**	**Average rate**	Average balance	Interest	Average rate
Assets						
Interest-earning assets:						
Interest-bearing deposits with the Federal Reserve and other central banks:						
Domestic offices	**$ 46,270**	**$ 810**	**1.75 %**	$ 47,070	$ 60	0.13 %
Foreign offices	**51,172**	**209**	**0.41**	66,276	(137)	(0.21)
Total interest-bearing deposits with the Federal Reserve and other central banks	**97,442**	**1,019**	**1.05**	113,346	(77)	(0.07)
Interest-bearing deposits with banks	**16,826**	**221**	**1.31**	20,757	48	0.23
Federal funds sold and securities purchased under resale agreements *(a)*	**24,953**	**1,200**	**4.81**	28,530	120	0.42
Loans:						
Domestic offices	**62,640**	**1,878**	**3.00**	55,073	892	1.62
Foreign offices	**5,185**	**121**	**2.33**	5,741	66	1.15
Total loans *(b)*	**67,825**	**1,999**	**2.95**	60,814	958	1.58
Securities:						
U.S. government obligations	**40,583**	**607**	**1.49**	34,383	261	0.76
U.S. government agency obligations	**64,041**	**1,157**	**1.81**	72,552	985	1.36
State and political subdivisions *(c)*	**1,887**	**43**	**2.31**	2,623	54	2.01
Other securities:						
Domestic offices *(c)*	**17,092**	**586**	**3.43**	17,145	333	1.94
Foreign offices	**26,283**	**154**	**0.59**	30,183	123	0.41
Total other securities *(c)*	**43,375**	**740**	**1.71**	47,328	456	0.96
Total investment securities *(c)*	**149,886**	**2,547**	**1.70**	156,886	1,756	1.12
Trading securities (primarily domestic) *(c)*	**5,248**	**143**	**2.73**	6,690	53	0.80
Total securities *(c)*	**155,134**	**2,690**	**1.73**	163,576	1,809	1.11
Total interest-earning assets *(c)*	**$ 362,180**	**$ 7,129**	**1.97 %**	$ 387,023	$ 2,858	0.74 %
Noninterest-earning assets	**64,721**			65,209		
Total assets	**$ 426,901**			$ 452,232		
Liabilities and equity						
Interest-bearing liabilities:						
Interest-bearing deposits:						
Domestic offices	**$ 111,491**	**$ 980**	**0.88 %**	$ 124,716	$ (27)	(0.02)%
Foreign offices	**101,916**	**607**	**0.60**	112,493	(148)	(0.13)
Total interest-bearing deposits	**213,407**	**1,587**	**0.74**	237,209	(175)	(0.07)
Federal funds purchased and securities sold under repurchase agreements *(a)*	**12,940**	**934**	**7.21**	13,716	(4)	(0.03)
Trading liabilities	**3,432**	**68**	**1.98**	2,590	8	0.31
Other borrowed funds:						
Domestic offices	**181**	**7**	**4.12**	160	5	2.99
Foreign offices	**324**	**2**	**0.51**	223	3	1.48
Total other borrowed funds	**505**	**9**	**1.80**	383	8	2.11
Commercial paper	**5**	**—**	**2.06**	3	—	0.07
Payables to customers and broker-dealers	**17,111**	**156**	**0.91**	16,887	(2)	(0.01)
Long-term debt	**27,448**	**860**	**3.13**	25,788	392	1.52
Total interest-bearing liabilities	**$ 274,848**	**$ 3,614**	**1.31 %**	$ 296,576	$ 227	0.08 %
Total noninterest-bearing deposits	**85,652**			86,606		
Other noninterest-bearing liabilities	**25,278**			24,381		
Total liabilities	**385,778**			407,563		
Total The Bank of New York Mellon Corporation shareholders' equity	**41,013**			44,358		
Noncontrolling interests	**110**			311		
Total liabilities and equity	**$ 426,901**			$ 452,232		
Net interest revenue (FTE) – Non-GAAP *(c)(d)*		**$ 3,515**			$ 2,631	
Net interest margin (FTE) – Non-GAAP *(c)(d)*			**0.97 %**			0.68 %
Less: Tax equivalent adjustment		**11**			13	
Net interest revenue – GAAP		**$ 3,504**			$ 2,618	
Net interest margin – GAAP			**0.97 %**			0.68 %
Percentage of assets attributable to foreign offices *(e)*	**26 %**			30 %		
Percentage of liabilities attributable to foreign offices *(e)*	**30 %**			31 %		

(a) Includes the average impact of offsetting under enforceable netting agreements of approximately $43 billion in 2022 and $45 billion in 2021. On a Non-GAAP basis, excluding the impact of offsetting, the yield on federal funds sold and securities purchased under resale agreements would have been 1.77% for 2022 and 0.16% for 2021, and the rate on federal funds purchased and securities sold under repurchase agreements would have been 1.67% for 2022 and (0.01)% for 2021. We believe providing the rates excluding the impact of netting is useful to investors as it is more reflective of the actual rates earned and paid.

(b) Interest income includes fees of $2 million in 2022 and $3 million in 2021. Nonaccrual loans are included in average loans; the associated income, which was recognized on a cash basis, is included in interest income.

(c) Average rates were calculated on an FTE basis, at tax rates of approximately 21% for both 2022 and 2021.

(d) See "Net interest revenue" on page 9 for the reconciliation of this Non-GAAP measure.

(e) Includes the Cayman Islands branch office, which existed through August 2021.

Average balances and interest rates	2020		
(dollars in millions)	Average balance	Interest	Average rate
Assets			
Interest-earning assets:			
Interest-bearing deposits with the Federal Reserve and other central banks:			
Domestic offices	$ 45,186	$ 121	0.27 %
Foreign offices	49,246	(71)	(0.14)
Total interest-bearing deposits with the Federal Reserve and other central banks	94,432	50	0.05
Interest-bearing deposits with banks	19,165	134	0.70
Federal funds sold and securities purchased under resale agreements *(a)*	30,768	545	1.77
Loans:			
Domestic offices	44,137	942	2.13
Foreign offices	11,091	200	1.81
Total loans *(b)*	55,228	1,142	2.07
Securities:			
U.S. government obligations	27,242	278	1.02
U.S. government agency obligations	75,430	1,328	1.76
State and political subdivisions *(c)*	1,418	36	2.51
Other securities:			
Domestic offices *(c)*	14,335	300	2.09
Foreign offices	29,402	212	0.72
Total other securities *(c)*	43,737	512	1.17
Total investment securities *(c)*	147,827	2,154	1.46
Trading securities (primarily domestic) *(c)*	7,106	93	1.31
Total securities *(c)*	154,933	2,247	1.45
Total interest-earning assets *(c)*	$ 354,526	$ 4,118	1.16 %
Noninterest-earning assets	58,792		
Total assets	$ 413,318		
Liabilities and equity			
Interest-bearing liabilities:			
Interest-bearing deposits:			
Domestic offices	$ 105,984	$ 176	0.17 %
Foreign offices	106,836	(15)	(0.01)
Total interest-bearing deposits	212,820	161	0.08
Federal funds purchased and securities sold under repurchase agreements *(a)*	14,862	283	1.90
Trading liabilities	2,177	15	0.68
Other borrowed funds:			
Domestic offices	849	15	1.81
Foreign offices	199	1	0.26
Total other borrowed funds	1,048	16	1.52
Commercial paper	1,082	7	0.66
Payables to customers and broker-dealers	17,789	28	0.16
Long-term debt	26,888	622	2.31
Total interest-bearing liabilities	$ 276,666	$ 1,132	0.41 %
Total noninterest-bearing deposits	69,124		
Other noninterest-bearing liabilities	23,879		
Total liabilities	369,669		
Total The Bank of New York Mellon Corporation shareholders' equity	43,430		
Noncontrolling interests	219		
Total liabilities and equity	$ 413,318		
Net interest revenue (FTE) – Non-GAAP *(c)(d)*		$ 2,986	
Net interest margin (FTE) – Non-GAAP *(c)(d)*			0.84 %
Less: Tax equivalent adjustment		9	
Net interest revenue – GAAP		$ 2,977	
Net interest margin – GAAP			0.84 %
Percentage of assets attributable to foreign offices *(e)*	30 %		
Percentage of liabilities attributable to foreign offices *(e)*	32 %		

(a) Includes the average impact of offsetting under enforceable netting agreements of approximately $57 billion in 2020. On a Non-GAAP basis, excluding the impact of offsetting, the yield on federal funds sold and securities purchased under resale agreements would have been 0.62%, and the rate on federal funds purchased and securities sold under repurchase agreements would have been 0.39% for 2020. We believe providing the rates excluding the impact of netting is useful to investors as it is more reflective of the actual rates earned and paid.

(b) Interest income includes fees of $6 million in 2020. Nonaccrual loans are included in average loans; the associated income, which was recognized on a cash basis, is included in interest income.

(c) Average rates were calculated on an FTE basis, at tax rates of approximately 21% in 2020.

(d) See "Net interest revenue" on page 9 for the reconciliation of this Non-GAAP measure.

(e) Includes the Cayman Islands branch office.

Noninterest expense

Noninterest expense				**2022 vs.**	2021 vs.
(dollars in millions)	**2022**	2021	2020	**2021**	2020
Staff	**$ 6,800**	$ 6,337	$ 5,966	**7 %**	6 %
Software and equipment	**1,657**	1,478	1,370	**12**	8
Professional, legal and other purchased services	**1,527**	1,459	1,403	**5**	4
Net occupancy	**514**	498	581	**3**	(14)
Sub-custodian and clearing	**485**	505	460	**(4)**	10
Distribution and servicing	**343**	298	336	**15**	(11)
Business development	**152**	107	105	**42**	2
Bank assessment charges	**126**	133	124	**(5)**	7
Goodwill impairment	**680**	—	—	**N/M**	N/M
Amortization of intangible assets	**67**	82	104	**(18)**	(21)
Other	**659**	617	555	**7**	11
Total noninterest expense	**$ 13,010**	$ 11,514	$ 11,004	**13 %**	5 %
Full-time employees at year-end	**51,700**	49,100	48,500	**5 %**	1 %

Total noninterest expense increased 13% compared with 2021. The increase primarily reflects goodwill impairment in the Investment Management reporting unit and higher severance expense and litigation reserves. Excluding notable items, noninterest expense increased 5% (Non-GAAP), primarily reflecting higher investments in growth, infrastructure and efficiency initiatives and higher revenue-related expenses, as well as the impact of inflation, partially offset by an approximately 3% favorable impact of a stronger U.S. dollar. The investments in growth, infrastructure and efficiency initiatives are primarily included in staff, software and equipment, and professional, legal and other purchased services expenses. See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of the Non-GAAP measure.

We expect noninterest expense for the year ended Dec. 31, 2023 to increase, but at a slower pace when compared with the year ended Dec. 31, 2022; the increase is driven by higher revenue-related expenses and higher investments in growth, infrastructure and efficiency initiatives, as well as the impact of inflation, partially offset by the benefit of efficiency initiatives.

Income taxes

BNY Mellon recorded an income tax provision of $768 million (23.1% effective tax rate) in 2022. Excluding notable items, the income tax provision was $930 million (19.1% effective tax rate) (Non-GAAP) in 2022. The income tax provision was $877 million (18.9% effective tax rate) in 2021. See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of the Non-GAAP measure. For additional information, see Note 12 of the Notes to Consolidated Financial Statements.

Review of business segments

We have an internal information system that produces performance data along product and service lines for our three principal business segments: Securities Services, Market and Wealth Services and Investment and Wealth Management, and the Other segment.

Business segment accounting principles

Our business segment data has been determined on an internal management basis of accounting, rather than the generally accepted accounting principles ("GAAP") used for consolidated financial reporting. These measurement principles are designed so that reported results of the business will track their economic performance.

For information on the accounting principles of our business segments, the primary products and services in each line of business, the primary types of revenue by line of business and how our business segments are presented and analyzed, see Note 24 of the Notes to Consolidated Financial Statements.

Business segment results are subject to reclassification when organizational changes are made, or for refinements in revenue and expense allocation methodologies. Refinements are typically reflected on a prospective basis. There were no reclassification or organizational changes in 2022.

The results of our business segments may be influenced by client and other activities that vary by quarter. In the first quarter, staff expense typically increases reflecting the vesting of long-term stock awards for retirement-eligible employees. Prior to 2022, in the third quarter, staff expense typically increased reflecting the annual employee merit increase. In 2022, this increase was reflected in the second quarter. In the third quarter, volume-related fees may decline due to reduced client activity. In the fourth quarter, we typically incur higher business development and marketing expenses; however, 2020 was an exception due to the impact of the coronavirus pandemic. In our Investment and Wealth Management business segment, performance fees are typically higher in the fourth and first quarters, as those quarters represent the end of the measurement period for many of the performance fee-eligible relationships.

The results of our business segments may also be impacted by the translation of financial results denominated in foreign currencies to the U.S. dollar. We are primarily impacted by activities denominated in the British pound and the euro. On a consolidated basis and in our Securities Services and Market and Wealth Services business segments, we typically have more foreign currency-denominated expenses than revenues. However, our Investment and Wealth Management business segment typically has more foreign currency-denominated revenues than expenses. Overall, currency fluctuations impact the year-over-year growth rate in the Investment and Wealth Management business segment more than the Securities Services and Market and Wealth Services business segments. However, currency fluctuations, in isolation, are not expected to significantly impact net income on a consolidated basis.

Fee revenue in the Investment and Wealth Management business segment, and to a lesser extent the Securities Services and Market and Wealth Services business segments, is impacted by the global market fluctuations. At Dec. 31, 2022, we estimated that a 5% change in global equity markets, spread evenly throughout the year, would impact fee revenue by less than 1% and diluted earnings per common share by $0.04 to $0.07.

See Note 24 of the Notes to Consolidated Financial Statements for the consolidating schedules which show the contribution of our business segments to our overall profitability.

Securities Services business segment

(dollars in millions, unless otherwise noted)	2022	2021	2020	2022 vs. 2021	2021 vs. 2020
Revenue:					
Investment services fees:					
Asset Servicing	**$ 3,918**	$ 3,876	$ 3,635	**1 %**	7 %
Issuer Services	**1,009**	1,061	1,100	**(5)**	(4)
Total investment services fees	**4,927**	4,937	4,735	**—**	4
Foreign exchange revenue	**584**	574	602	**2**	(5)
Other fees *(a)*	**202**	113	182	**79**	(38)
Total fee revenue	**5,713**	5,624	5,519	**2**	2
Investment and other revenue	**291**	194	159	**N/M**	N/M
Total fee and other revenue	**6,004**	5,818	5,678	**3**	2
Net interest revenue	**2,028**	1,426	1,697	**42**	(16)
Total revenue	**8,032**	7,244	7,375	**11**	(2)
Provision for credit losses	**8**	(134)	215	**N/M**	N/M
Noninterest expense (excluding amortization of intangible assets)	**6,266**	5,820	5,522	**8**	5
Amortization of intangible assets	**33**	32	34	**3**	(6)
Total noninterest expense	**6,299**	5,852	5,556	**8**	5
Income before income taxes	**$ 1,725**	$ 1,526	$ 1,604	**13 %**	(5)%
Pre-tax operating margin	**21 %**	21 %	22 %		
Securities lending revenue *(b)*	**$ 182**	$ 173	$ 170	**5 %**	2 %
Total revenue by line of business:					
Asset Servicing	**$ 6,323**	$ 5,699	$ 5,705	**11 %**	— %
Issuer Services	**1,709**	1,545	1,670	**11**	(7)
Total revenue by line of business	**$ 8,032**	$ 7,244	$ 7,375	**11 %**	(2)%
Selected average balances:					
Average loans	**$ 11,245**	$ 8,756	$ 9,225	**28 %**	(5)%
Average deposits	**$ 183,990**	$ 200,482	$ 177,853	**(8)%**	13 %
Selected metrics:					
AUC/A at period end *(in trillions) (c)*	**$ 31.4**	$ 34.6	$ 30.6	**(9)%**	13 %
Market value of securities on loan at period end *(in billions) (d)*	**$ 449**	$ 447	$ 435	**— %**	3 %

(a) Other fees primarily includes financing-related fees.

(b) Included in investment services fees reported in the Asset Servicing line of business.

(c) Consists of AUC/A primarily from the Asset Servicing line of business and, to a lesser extent, the Issuer Services line of business. Includes the AUC/A of CIBC Mellon of $1.5 trillion at Dec. 31, 2022 and $1.7 trillion at Dec. 31, 2021 and $1.5 trillion at Dec. 31, 2020.

(d) Represents the total amount of securities on loan in our agency securities lending program. Excludes securities for which BNY Mellon acts as agent on behalf of CIBC Mellon clients, which totaled $68 billion at Dec. 31, 2022, $71 billion at Dec. 31, 2021 and $68 billion at Dec. 31, 2020.

N/M – Not meaningful.

Business segment description

The Securities Services business segment consists of two distinct lines of business, Asset Servicing and Issuer Services, which provide business solutions across the transaction lifecycle to our global asset owner and asset manager clients. We are one of the leading global investment services providers with $31.4 trillion of AUC/A at Dec. 31, 2022. For information on the drivers of the Securities Services fee revenue, see Note 10 of the Notes to Consolidated Financial Statements.

The Asset Servicing business provides a comprehensive suite of solutions. We are one of the largest global custody and front-to-back outsourcing partners. We offer services for the safekeeping of assets in capital markets globally as well as fund accounting services, exchange-traded funds servicing, transfer agency, trust and depository, front-to-back

capabilities as well as data and analytics solutions for our clients. We deliver foreign exchange, and securities lending and financing solutions, on both an agency and principal basis. Our agency securities lending program is one of the largest lenders of U.S. and non-U.S. securities, servicing a lendable asset pool of approximately $4.5 trillion in 34 separate markets. Our market-leading liquidity services portal enables cash investments for institutional clients and includes fund research and analytics.

The Issuer Services business includes Corporate Trust and Depositary Receipts. Our Corporate Trust business delivers a full range of issuer and related investor services, including trustee, paying agency, fiduciary, escrow and other financial services. We are a leading provider to the debt capital markets, providing customized and market-driven solutions to investors, bondholders and lenders. Our Depositary Receipts business drives global investing by providing servicing and value-added solutions that enable, facilitate and enhance cross-border trading, clearing, settlement and ownership. We are one of the largest providers of depositary receipts services in the world, partnering with leading companies from more than 50 countries.

Review of financial results

AUC/A of $31.4 trillion decreased 9% compared with Dec. 31, 2021, primarily reflecting lower market values and the unfavorable impact of a stronger U.S. dollar, partially offset by client inflows and net new business.

Total revenue of $8.0 billion increased 11% compared with 2021. The drivers of total revenue by line of business are indicated below.

Asset Servicing revenue of $6.3 billion increased 11% compared with 2021, primarily reflecting higher net interest revenue, lower money market fee waivers and higher client activity, partially offset by the unfavorable impact of a stronger U.S. dollar and lower market values.

Issuer Services revenue of $1.7 billion increased 11% compared with 2021, primarily reflecting higher net interest revenue and lower money market fee waivers, partially offset by the accelerated amortization of deferred costs for depositary receipts services related to Russia.

Market and regulatory trends are driving investable assets toward lower fee asset management products at reduced margins for our clients. These dynamics are also negatively impacting our investment services fees. However, at the same time, these trends are providing additional outsourcing opportunities as clients and other market participants seek to comply with regulations and reduce their operating costs.

Noninterest expense of $6.3 billion increased 8% compared with 2021, primarily reflecting higher investments in growth, infrastructure and efficiency initiatives, as well as the impact of inflation, partially offset by the favorable impact of a stronger U.S. dollar.

Market and Wealth Services business segment

(dollars in millions, unless otherwise noted)	2022	2021	2020	2022 vs. 2021	2021 vs. 2020
Revenue:					
Investment services fees:					
Pershing	**$ 1,908**	$ 1,737	$ 1,734	**10 %**	— %
Treasury Services	**689**	662	641	**4**	3
Clearance and Collateral Management	**971**	918	896	**6**	2
Total investment services fees	**3,568**	3,317	3,271	**8**	1
Foreign exchange revenue	**88**	88	79	—	11
Other fees *(a)*	**176**	131	166	**34**	(21)
Total fee revenue	**3,832**	3,536	3,516	**8**	1
Investment and other revenue	**40**	47	62	**N/M**	N/M
Total fee and other revenue	**3,872**	3,583	3,578	**8**	—
Net interest revenue	**1,410**	1,158	1,228	**22**	(6)
Total revenue	**5,282**	4,741	4,806	**11**	(1)
Provision for credit losses	**7**	(67)	100	**N/M**	N/M
Noninterest expense (excluding amortization of intangible assets)	**2,924**	2,655	2,577	**10**	3
Amortization of intangible assets	**8**	21	37	**(62)**	(43)
Total noninterest expense	**2,932**	2,676	2,614	**10**	2
Income before income taxes	**$ 2,343**	$ 2,132	$ 2,092	**10 %**	2 %
Pre-tax operating margin	**44 %**	45 %	44 %		
Total revenue by line of business:					
Pershing	**$ 2,537**	$ 2,314	$ 2,332	**10 %**	(1)%
Treasury Services	**1,483**	1,293	1,327	**15**	(3)
Clearance and Collateral Management	**1,262**	1,134	1,147	**11**	(1)
Total revenue by line of business	**$ 5,282**	$ 4,741	$ 4,806	**11 %**	(1)%
Selected average balances:					
Average loans	**$ 41,300**	$ 38,344	$ 32,432	**8 %**	18 %
Average deposits	**$ 91,749**	$ 102,948	$ 83,442	**(11)%**	23 %
Selected metrics:					
AUC/A at period end *(in trillions) (b)*	**$ 12.7**	$ 11.8	$ 10.2	**8 %**	16 %
Pershing:					
AUC/A at period end *(in trillions)*	**$ 2.3**	$ 2.6	$ 2.5	**(12)%**	4 %
Net new assets (U.S. platform) *(in billions) (c)*	**$ 121**	$ 161	$ 116	**N/M**	N/M
Average active clearing accounts *(in thousands)*	**7,483**	7,257	6,883	**3 %**	5 %
Treasury Services:					
Average daily U.S. dollar payment volumes	**239,630**	235,971	221,755	**2 %**	6 %
Clearance and Collateral Management:					
Average tri-party collateral management balances *(in billions)*	**$ 5,285**	$ 4,260	$ 3,566	**24 %**	19 %

(a) Other fees primarily include financing-related fees.
(b) Consists of AUC/A from the Clearance and Collateral Management and Pershing businesses.
(c) Net new assets represent net flows of assets (e.g., net cash deposits and net securities transfers, including dividends and interest) in customer accounts in Pershing LLC, a U.S. broker-dealer.
N/M – Not meaningful.

Business segment description

The Market and Wealth Services business segment consists of three distinct lines of business, Pershing, Treasury Services and Clearance and Collateral Management, which provide business services and technology solutions to entities including financial institutions, corporations, foundations and endowments, public funds and government agencies. For information on the drivers of the Market and Wealth Services fee revenue, see Note 10 of the Notes to Consolidated Financial Statements.

Pershing provides execution, clearing, custody, business and technology solutions, delivering operational support to broker-dealers, wealth managers and registered investment advisors ("RIAs") globally.

Our Treasury Services business is a leading provider of global payments, liquidity management and trade finance services for financial institutions, corporations and the public sector.

Our Clearance and Collateral Management business clears and settles equity and fixed-income transactions globally and serves as custodian for tri-party repo collateral worldwide. We are the primary provider of U.S. government securities clearance and a provider of non-U.S. government securities clearance. Our collateral services include collateral management, administration and segregation. We offer innovative solutions and industry expertise which help financial institutions and institutional investors with their financing, risk and balance sheet challenges. We are a leading provider of tri-party collateral management services with an average of $5.3 trillion serviced globally including approximately $4.2 trillion of the U.S. tri-party repo market at Dec. 31, 2022.

Review of financial results

AUC/A of $12.7 trillion increased 8% compared with Dec. 31, 2021, primarily reflecting net client inflows, partially offset by lower market values and the impact of a stronger U.S. Dollar.

Total revenue of $5.3 billion increased 11% compared with 2021. The drivers of total revenue by line of business are indicated below.

Pershing revenue of $2.5 billion increased 10% compared with 2021, primarily reflecting lower money market fee waivers and higher fees on sweep balances, partially offset by the impact of prior year lost business.

Treasury Services revenue of $1.5 billion increased 15% compared with 2021, primarily reflecting higher net interest revenue and lower money market fee waivers.

Clearance and Collateral Management revenue of $1.3 billion increased 11% compared with 2021, primarily reflecting higher net interest revenue and higher U.S. government clearance volumes.

Noninterest expense of $2.9 billion increased 10% compared with 2021, primarily reflecting higher investments in growth, infrastructure and efficiency initiatives and higher revenue-related expenses, as well as the impact of inflation, partially offset by the impact of the stronger U.S. dollar.

Investment and Wealth Management business segment

(dollars in millions)	2022	2021	2020	2022 vs. 2021	2021 vs. 2020
Revenue:					
Investment management fees	**$ 3,215**	$ 3,483	$ 3,261	**(8)%**	7 %
Performance fees	**75**	107	107	**(30)**	—
Investment management and performance fees *(a)*	**3,290**	3,590	3,368	**(8)**	7
Distribution and servicing fees	**192**	112	137	**71**	(18)
Other fees *(b)*	**(133)**	80	(58)	**N/M**	N/M
Total fee revenue	**3,349**	3,782	3,447	**(11)**	10
Investment and other revenue *(c)*	**(27)**	67	48	**N/M**	N/M
Total fee and other revenue *(c)*	**3,322**	3,849	3,495	**(14)**	10
Net interest revenue	**228**	193	197	**18**	(2)
Total revenue	**3,550**	4,042	3,692	**(12)**	9
Provision for credit losses	**1**	(13)	20	**N/M**	N/M
Noninterest expense (excluding goodwill impairment and amortization of intangible assets)	**2,795**	2,796	2,668	**—**	5
Goodwill impairment	**680**	—	—	**N/M**	N/M
Amortization of intangible assets	**26**	29	33	**(10)**	(12)
Total noninterest expense	**3,501**	2,825	2,701	**24**	5
Income before income taxes	**$ 48**	$ 1,230	$ 971	**(96)%** *(d)*	27 %
Pre-tax operating margin	**1 %**	30 %	26 %		
Adjusted pre-tax operating margin – Non-GAAP *(e)*	**2 %** *(f)*	33 %	29 %		
Total revenue by line of business:					
Investment Management	**$ 2,390**	$ 2,834	$ 2,596	**(16)%**	9 %
Wealth Management	**1,160**	1,208	1,096	**(4)**	10
Total revenue by line of business	**$ 3,550**	$ 4,042	$ 3,692	**(12)%**	9 %
Selected average balances:					
Average loans	**$ 14,055**	$ 12,120	$ 11,728	**16 %**	3 %
Average deposits	**$ 19,214**	$ 18,068	$ 17,340	**6 %**	4 %

(a) On a constant currency basis, investment management and performance fees decreased 5% (Non-GAAP) compared with 2021. See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of this Non-GAAP measure.

(b) Other fees primarily includes investment services fees.

(c) Investment and other revenue and total fee and other revenue are net of income attributable to noncontrolling interests related to consolidated investment management funds.

(d) Excluding notable items, income before income taxes decreased 39% (Non-GAAP) compared with 2021. See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of this Non-GAAP measure.

(e) Net of distribution and servicing expense. See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of this Non-GAAP measure.

(f) Excluding notable items and net of distribution and servicing expense, the adjusted pre-tax operating margin was 24% (Non-GAAP) in 2022. See "Supplemental Information – Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for the reconciliation of this Non-GAAP measure.

N/M – Not meaningful.

AUM trends *(in billions)*	**2022**	2021	2020
AUM by product type *(a)*:			
Equity	**$ 135**	$ 187	$ 170
Fixed income	**198**	267	259
Index	**395**	467	393
Liability-driven investments	**570**	890	855
Multi-asset and alternative investments	**153**	228	209
Cash	**385**	395	325
Total AUM	**$ 1,836**	$ 2,434	$ 2,211
Changes in AUM *(a)*:			
Beginning balance of AUM	**$ 2,434**	$ 2,211	$ 1,910
Net inflows (outflows):			
Long-term strategies:			
Equity	**(18)**	(12)	(10)
Fixed income	**(21)**	17	10
Liability-driven investments	**78**	36	22
Multi-asset and alternative investments	**(11)**	(2)	(4)
Total long-term active strategies inflows	**28**	39	18
Index	**2**	(7)	6
Total long-term strategies inflows	**30**	32	24
Short-term strategies:			
Cash	**(12)**	70	49
Total net inflows	**18**	102	73
Net market impact	**(471)**	143	186
Net currency impact	**(113)**	(22)	42
Divestiture	**(32)**	—	—
Ending balance of AUM	**$ 1,836**	$ 2,434	$ 2,211
Wealth Management client assets *(b)*	**$ 269**	$ 321	$ 286

(a) Excludes assets managed outside of the Investment and Wealth Management business segment.
(b) Includes AUM and AUC/A in the Wealth Management line of business.

Business segment description

Our Investment and Wealth Management business segment consists of two distinct lines of business, Investment Management and Wealth Management, which have a combined AUM of $1.8 trillion as of Dec. 31, 2022.

BNY Mellon Investment Management is a leading global asset manager and consists of our seven specialist investment firms and global distribution network to deliver a highly diversified portfolio of investment strategies to institutional and retail clients globally.

Our Investment Management model provides specialized expertise from seven respected investment firms offering solutions across every major asset class, with backing from the proven stewardship and global presence of BNY Mellon. Each investment firm has its own individual culture, investment philosophy and proprietary investment process. This approach brings our clients clear, independent thinking from highly experienced investment professionals.

The investment firms offer a broad range of actively managed equity, fixed income, alternative and liability-driven investments, along with passive products and cash management. Our six majority-owned investment firms are as follows: ARX, Dreyfus, Insight Investment, Mellon, Newton Investment Management and Walter Scott. BNY Mellon owns a non-controlling interest in Siguler Guff.

In November 2022, BNY Mellon sold Alcentra. As part of the sale agreement, Investment Management will continue to offer Alcentra's capabilities in BNY Mellon's sub-advised funds and in select regions via its global distribution platform. BNY Mellon will continue to provide Alcentra with ongoing asset servicing support.

In addition to its investment firms, Investment Management has multiple global distribution entities, which are responsible for distributing the investment solutions developed and managed by the investment firms, as well as responsibility for management and distribution of our U.S. mutual funds and certain offshore money market funds.

BNY Mellon Wealth Management provides investment management, custody, wealth and estate planning, private banking services, investment servicing and information management. BNY Mellon Wealth Management has $269 billion in client assets as of Dec. 31, 2022, and more than 30 offices in the U.S. and internationally.

Wealth Management clients include individuals, families and institutions. Institutions include family offices, charitable gift programs and endowments and foundations. We work with clients to build, manage and sustain wealth across generations and market cycles.

The wealth business differentiates itself with a comprehensive wealth management framework called Active Wealth that seeks to empower clients to build and sustain long-term wealth.

The results of the Investment and Wealth Management business segment are driven by a blend of daily, monthly and quarterly averages of AUM by product type. The overall level of AUM for a given period is determined by:

- the beginning level of AUM;
- the net flows of new assets during the period resulting from new business wins and existing client inflows, reduced by the loss of clients and existing client outflows; and
- the impact of market price appreciation or depreciation, foreign exchange rates and investment firm acquisitions or divestitures.

The mix of AUM is a result of the historical growth rates of equity and fixed income markets and the cumulative net flows of our investment firms as a result of client asset allocation decisions. Actively managed equity, multi-asset and alternative assets typically generate higher percentage fees than fixed-income and liability-driven investments and cash. Also, actively managed assets typically generate higher management fees than indexed or passively managed assets of the same type. Market and regulatory trends have resulted in increased demand for lower fee asset management products and for performance-based fees.

Investment management fees are dependent on the overall level and mix of AUM and the management fees expressed in basis points (one-hundredth of one percent) charged for managing those assets. Management fees are typically subject to fee schedules based on the overall level of assets managed for a single client or by individual asset class and style. This is most common for institutional clients where we typically manage substantial assets for individual accounts.

Performance fees are generally calculated as a percentage of a portfolio's performance in excess of a benchmark index or a peer group's performance.

A key driver of organic growth in investment management and performance fees is the amount of net new AUM flows. Overall market conditions are also key drivers, with a significant long-term economic driver being growth of global financial assets.

Net interest revenue is determined by loan and deposit volumes and the interest rate spread between customer rates and internal funds transfer rates on loans and deposits. Expenses in the Investment and Wealth Management business segment are mainly driven by staff and distribution and servicing expenses.

Review of financial results

AUM of $1.8 trillion decreased 25% compared with Dec. 31, 2021, primarily reflecting lower market values, the unfavorable impact of a stronger U.S. dollar and the divestiture of Alcentra, partially offset by net inflows.

Net long-term strategy inflows were $30 billion in 2022, driven by inflows of liability-driven investments, partially offset by outflows of fixed income, equity and multi-asset and alternative investments. Short-term strategy outflows were $12 billion in 2022.

Total revenue of $3.6 billion decreased 12% compared with 2021. The drivers of total revenue by line of business are indicated below.

Investment Management revenue of $2.4 billion decreased 16% compared with 2021, primarily reflecting lower market values, the unfavorable impact of a stronger U.S. dollar, the mix of cumulative net inflows, lower seed capital results and the impact of the Alcentra divestiture, partially offset by lower money market fee waivers.

Wealth Management revenue of $1.2 billion decreased 4% compared with 2021, primarily reflecting lower market values, partially offset by higher net interest revenue.

Revenue generated in the Investment and Wealth Management business segment included 35% from non-U.S. sources in 2022, compared with 38% in 2021.

Noninterest expense of $3.5 billion increased 24% compared with 2021, primarily reflecting goodwill impairment in the Investment Management reporting unit and investments in growth initiatives, partially offset by the favorable impact of a strong U.S. dollar.

Other segment

(in millions)		2022	2021	2020
Fee revenue	$	**61**	$ 36	$ 34
Investment and other revenue		**(373)**	15	37
Total fee and other revenue		**(312)**	51	71
Net interest expense		**(162)**	(159)	(145)
Total revenue		**(474)**	(108)	(74)
Provision for credit losses		**23**	(17)	1
Noninterest expense		**278**	161	133
(Loss) before income taxes	$	**(775)**	$ (252)	$ (208)
Average loans and leases	$	**1,225**	$ 1,594	$ 1,843

Segment description

The Other segment primarily includes:

- the leasing portfolio;
- corporate treasury activities, including our securities portfolio;
- derivatives and other trading activity;
- corporate and bank-owned life insurance;
- renewable energy and other corporate investments; and
- certain business exits.

Revenue primarily reflects:

- net interest revenue (expense) and lease-related gains (losses) from leasing operations;
- net interest revenue (expense) and derivatives and other corporate treasury activities;
- other revenue from certain business exits;
- investment and other revenue from corporate and bank-owned life insurance, gains (losses) associated with investment securities and other assets, including renewable energy; and
- fee revenue from the elimination of the results of certain services provided between segments, which are also provided to third parties.

Expenses include:

- direct expenses supporting leasing, investing and funding activities; and
- expenses not directly attributable to Securities Services, Market and Wealth Services and Investment and Wealth Management operations.

Review of financial results

Loss before taxes was $775 million in 2022 compared with $252 million in 2021.

Investment and other revenue decreased $388 million compared with 2021, primarily reflecting a $449 million net loss from repositioning the securities portfolio, partially offset by an impairment for a renewable energy investment recorded in 2021.

Noninterest expense increased $117 million compared with 2021, primarily reflecting higher severance expense.

International operations

Our primary international activities consist of asset servicing in our Securities Services business segment, global payment services in our Market and Wealth Services business segment and investment management in our Investment and Wealth Management business segment.

Our clients include central banks and sovereigns, financial institutions, asset managers, insurance companies, corporations, local authorities and high-net-worth individuals and family offices. Through our global network of offices, we have developed a deep understanding of local requirements and cultural needs, and we pride ourselves on providing dedicated service through our multilingual sales, marketing and client service teams.

At Dec. 31, 2022, approximately 50% of our total employees (full-time and part-time employees) were based outside the U.S., with approximately 10,600 employees in EMEA, approximately 16,100 employees in APAC and approximately 900 employees in other global locations, primarily Brazil.

We are a leading global asset manager. Our international operations managed 53% of BNY

Mellon's AUM at Dec. 31, 2022 and 60% at Dec. 31, 2021.

In Europe, we maintain capabilities to service Undertakings for Collective Investment in Transferable Securities and alternative investment funds. We offer a full range of tailored solutions for investment companies, financial institutions and institutional investors across most European markets.

We are a provider of non-U.S. government securities, fixed income and equities clearance, settling securities transactions directly in European markets, and using a high-quality and established network of local agents in non-European markets.

We have extensive experience providing trade and cash services to financial institutions and central banks outside of the U.S. In addition, we offer a broad range of servicing and fiduciary products to financial institutions, corporations and central banks. In emerging markets, we lead with custody, global payments and issuer services, introducing other products as the markets mature. For more established markets, our focus is on global investment services.

We are also a full-service global provider of foreign exchange services, actively trading in over 100 of the world's currencies. We serve clients from trading desks located in Europe, Asia and North America.

Our financial results, as well as our levels of AUC/A and AUM, are impacted by translation from foreign currencies to the U.S. dollar. We are primarily impacted by activities denominated in the British pound and the euro. If the U.S. dollar depreciates against these currencies, the translation impact is a higher level of fee revenue, net interest revenue, noninterest expense and AUC/A and AUM. Conversely, if the U.S. dollar appreciates, the translated levels of fee revenue, net interest revenue, noninterest expense and AUC/A and AUM will be lower.

Foreign exchange rates vs. U.S. dollar	**2022**	2021	2020
Spot rate (at Dec. 31):			
British pound	**$ 1.2096**	$ 1.3543	$ 1.3663
Euro	**1.0708**	1.1373	1.2267
Yearly average rate:			
British pound	**$ 1.2375**	$ 1.3755	$ 1.2836
Euro	**1.0550**	1.1994	1.1414

International clients accounted for 36% of revenues in 2022, compared with 38% in 2021. Net income from international operations was $1.7 billion in 2022, compared with $1.8 billion in 2021.

In 2022, revenues from EMEA were $4.0 billion, compared with $4.1 billion in 2021. The 4% decrease primarily reflects lower revenue in the Investment and Wealth Management business segment, partially offset by higher revenue in the Securities Services business segment. The decrease in revenue in the Investment and Wealth Management business segment primarily reflects the unfavorable impact of a stronger U.S. dollar and lower market values. The increase in revenue in the Securities Services business segment primarily reflects higher net interest revenue, partially offset by the unfavorable impact of a stronger U.S. dollar.

The Securities Services, Investment and Wealth Management and Market and Wealth Services business segments generated 55%, 25% and 20% of EMEA revenues, respectively. Net income from EMEA was $880 million in 2022, compared with $1.0 billion in 2021.

Revenues from APAC were $1.13 billion in 2022, compared with $1.14 billion in 2021. The 1% decrease primarily reflects lower revenue in the Investment and Wealth Management business segment, partially offset by higher revenue in the Securities Services business segment. The decrease in Investment and Wealth Management revenue was primarily driven by the unfavorable impact of a stronger U.S. dollar and lower market values.

The Securities Services, Market and Wealth Services and Investment and Wealth Management business segments generated 54%, 32% and 14% of APAC revenues, respectively. Net income from APAC was $432 million in 2022, compared with $445 million in 2021.

For additional information regarding our international operations, including certain key subjective assumptions used in determining the results, see Note 25 of the Notes to Consolidated Financial Statements.

Country risk exposure

The following table presents BNY Mellon's top 10 exposures by country (excluding the U.S.) as of Dec. 31, 2022, as well as certain countries with higher-risk profiles, and is presented on an internal risk management basis. We monitor our exposure to these and other countries as part of our internal country risk management process.

The country risk exposure below reflects the Company's risk to an immediate default of the counterparty or obligor based on the country of residence of the entity which incurs the liability. If there is credit risk mitigation, the country of residence of the entity providing the risk mitigation is the country of risk. The country of risk for securities is generally based on the domicile of the issuer of the security.

Country risk exposure at Dec. 31, 2022	Interest-bearing deposits					Total exposure
(in billions)	Central banks	Banks	Lending *(a)*	Securities *(b)*	Other *(c)*	
Top 10 country exposure:						
Germany	$ 14.0	$ 1.0	$ 0.8	$ 4.2	$ 0.2	$ 20.2
United Kingdom ("UK")	10.9	0.1	1.2	4.3	2.4	18.9
Belgium	8.2	0.7	0.1	0.1	—	9.1
Canada	—	2.2	0.9	3.9	1.8	8.8
Netherlands	3.8	—	0.2	1.0	0.2	5.2
Singapore	0.1	1.4	0.1	1.0	0.9	3.5
South Korea	0.1	0.1	2.3	0.1	0.2	2.8
Ireland	0.1	0.2	0.9	—	1.6	2.8
Luxembourg	0.1	0.3	1.0	0.1	1.3	2.8
Japan	1.1	0.9	—	0.5	0.2	2.7
Total Top 10 country exposure	**$ 38.4**	**$ 6.9**	**$ 7.5**	**$ 15.2**	**$ 8.8**	**$ 76.8** *(d)*
Select country exposure:						
Brazil	$ —	$ —	$ 0.9	$ 0.1	$ 0.2	$ 1.2
Russia	—	0.4 *(e)*	—	—	—	0.4

(a) Lending includes loans, acceptances, issued letters of credit, net of participations, and lending-related commitments.
(b) Securities include both the available-for-sale and held-to-maturity portfolios.
(c) Other exposure includes over-the-counter ("OTC") derivative and securities financing transactions, net of collateral.
(d) The top 10 country exposure comprises approximately 70% of our total non-U.S. exposure.
(e) Represents cash balances with exposure to Russia.

Events in recent years have resulted in increased focus on Brazil. The country risk exposure to Brazil is primarily short-term trade finance loans extended to large financial institutions. We also have operations in Brazil providing investment services and investment management services.

The war in Ukraine has increased our focus on Russia. The country risk exposure to Russia consists of cash balances related to our securities services businesses and may increase in the future to the extent cash is received for the benefit of our clients that is subject to distribution restrictions. BNY Mellon has ceased new banking business in Russia and suspended investment management purchases of Russian securities. At Dec. 31, 2022, less than 0.1% of our AUC/A and less than 0.01% of our AUM consisted of Russian securities. We will continue to work with multinational clients that depend on our custody and record keeping services to manage their exposures.

Critical accounting estimates

Our significant accounting policies are described in Note 1 of the Notes to Consolidated Financial Statements. Certain of these policies include critical accounting estimates which require management to make subjective or complex judgments about the effect of matters that are inherently uncertain and may change in subsequent periods. Our critical accounting estimates are those related to the allowance for credit losses, goodwill and other intangibles and litigation and regulatory contingencies. Management has discussed the development and selection of the critical accounting estimates with the Company's Audit Committee.

Allowance for credit losses

The allowance for credit losses covers financial assets subject to credit losses and measured at amortized cost, including loans and lending-related

commitments, held-to-maturity securities, certain securities financing transactions and deposits with banks. The allowance for credit losses is intended to adjust the carrying value of these assets by an estimated amount of credit losses that we expect to incur over the life of the asset. Similarly, the allowance for credit losses on lending-related commitments and other off-balance sheet financial instruments is meant to capture the credit losses that we expect to recognize in these portfolios as of the balance sheet date.

A quantitative methodology and qualitative framework is used to estimate the allowance for credit losses.

The quantitative component of our estimate uses models and methodologies that categorize financial assets based on product type, collateral type, and other credit trends and risk characteristics, including relevant information about past events, current conditions and reasonable and supportable forecasts of future economic conditions that affect the collectability of the recorded amounts. For the quantitative component, we segment portfolios into various major components including commercial loans and lease financing, commercial real estate, financial institutions, residential mortgages, and other. The segmentation of our debt securities portfolios is by major asset class and is influenced by whether the security is structured or non-structured (i.e., direct obligation), as well as the issuer type. The components of the credit loss calculation for each major portfolio or asset class include a probability of default, loss given default and exposure at default, as applicable, and their values depend on the forecast behavior of variables in the macroeconomic environment. We utilize a multi-scenario macroeconomic forecast which includes a weighting of three scenarios: a baseline and upside and downside scenarios and allows us to develop our estimate using a wide span of economic variables. Our baseline scenario reflects a view on likely performance of each global region and the other two scenarios are designed relative to the baseline scenario. This approach incorporates a reasonable and supportable forecast period spanning the life of the asset, and includes both an initial estimated economic outlook component as well as a reversion component for each economic input variable. The length of each of the two components depends on the underlying financial instrument, scenario, and underlying economic input variable. In general, the initial economic outlook period for each economic input variable under each scenario ranges between several months and two years. The speed at which the scenario-specific forecasts revert to long-term historical mean is based on observed historical patterns of mean reversion at the economic variable input level that are reflected in our model parameter estimates. Certain macroeconomic variables such as unemployment or home prices take longer to revert after a contraction, though specific recovery times are scenario-specific. Reversion will usually take longer the further away the scenario-specific forecast is from the historical mean. On a quarterly basis, and within a developed governance structure, we update these scenarios for current economic conditions and may adjust the scenario weighting based on our economic outlook. The Company uses its best judgment to assess these economic conditions and loss data in estimating the allowance for credit losses and these estimates are subject to periodic refinement based on changes to underlying external or Company-specific historical data.

In the quantitative component of our estimate, we measure expected credit losses using an individual evaluation method if the risk characteristics of the asset is no longer consistent with the portfolio or class of asset. For these assets we do not employ the macroeconomic model calculation but consider factors such as payment status, collateral value, the obligor's financial condition, guarantor support, the probability of collecting scheduled principal and interest payments when due, and recovery expectations if they can be reasonably estimated. For loans, we measure the expected credit loss as the difference between the amortized cost basis of the loan and the present value of the expected future cash flows from the borrower which is generally discounted at the loan's effective interest rate, or the fair value of the collateral, if the loan is collateral dependent. We generally consider nonperforming loans as well as loans that have been or are anticipated to be modified and classified under a troubled debt restructuring for individual evaluation given the risk characteristics of such loans.

Available-for-sale debt securities are recorded at fair value. When an available-for-sale debt security is in an unrealized loss position, we employ a methodology to identify and estimate the credit loss portion of the unrealized loss position. The measurement of expected credit losses is performed at the security level and is based on our best single

estimate of cash flows, on a discounted basis; however, we do not specifically employ the macroeconomic forecasting models and scenarios summarized above.

The qualitative component of our estimate for the allowance for credit losses is intended to capture expected losses that may not have been fully captured in the quantitative component. Through an established governance structure, management determines the qualitative allowance each period based on an evaluation of various internal and environmental factors which include: scenario weighting and sensitivity risk, credit concentration risk, economic conditions and other considerations. We have made and may continue to make adjustments for idiosyncratic risks.

To the extent actual results differ from forecasts or management's judgment, the allowance for credit losses may be greater or less than future charge-offs and recoveries.

Our allowance for credit losses is sensitive to a number of inputs, most notably the credit ratings assigned to each borrower as well as macroeconomic forecast assumptions that are incorporated in our estimate of credit losses through the expected life of the loan portfolio. Thus, as the macroeconomic environment and related forecasts change, the allowance for credit losses may change materially. The following sensitivity analyses do not represent management's expectations of the deterioration of our portfolios or the economic environment, but are provided as hypothetical scenarios to assess the sensitivity of the allowance for credit losses to changes in key inputs. If commercial real estate property values were increased 10% and all other credits were rated one grade better, the quantitative allowance would have decreased by $36 million, and if commercial real estate property values were decreased 10% and all other credits were rated one grade worse, the quantitative allowance would have increased by $71 million. Our multi-scenario based macroeconomic forecast used in determining the Dec. 31, 2022 allowance for credit losses consisted of three scenarios. The baseline scenario reflects slowing GDP growth through mid-2023, slightly rising unemployment through the end of 2023, and slightly declining commercial real estate prices through the end of 2023. The upside scenario reflects strong GDP growth in early 2023, declining unemployment and higher commercial real estate prices compared with the baseline. The downside scenario contemplates negative GDP growth through the third quarter of 2023, increasing unemployment through the first quarter of 2024 and lower commercial real estate prices than the baseline. At Dec. 31, 2022, we placed the most weighting on our baseline and downside scenarios, with the remaining weighting placed on the upside scenario. From a sensitivity perspective, at Dec. 31, 2022, if we had applied 100% weighting to the downside scenario, the quantitative allowance for credit losses would have been approximately $83 million higher.

Goodwill and other intangibles

We initially record all assets and liabilities acquired in purchase acquisitions, including goodwill, indefinite-lived intangibles and other intangibles, in accordance with Accounting Standards Codification ("ASC") 805, *Business Combinations*. Goodwill, indefinite-lived intangibles and other intangibles are subsequently accounted for in accordance with ASC 350, *Intangibles – Goodwill and Other.* The initial measurement of goodwill and intangibles requires judgment concerning estimates of the fair value of the acquired assets and liabilities. Goodwill ($16.2 billion at Dec. 31, 2022) and indefinite-lived intangible assets ($2.6 billion at Dec. 31, 2022) are not amortized but are subject to tests for impairment annually or more often if events or circumstances indicate it is more likely than not they may be impaired. Other intangible assets are amortized over their estimated useful lives and are subject to impairment if events or circumstances indicate a possible inability to realize the carrying value.

Goodwill

BNY Mellon's business segments include six reporting units for which annual goodwill impairment testing is performed in accordance with ASC 350, *Intangibles – Goodwill and Other*.

The goodwill impairment test compares the estimated fair value of the reporting unit with its carrying amount, including goodwill. If the estimated fair value of the reporting unit exceeds its carrying amount, goodwill of the reporting unit is considered not impaired. However, if the carrying amount of the reporting unit were to exceed its estimated fair value, an impairment loss would be recorded.

Determining the fair value of a reporting unit is subject to uncertainty as it is reliant on estimates of cash flows that extend far into the future, and, by their nature, are difficult to estimate over such an extended time frame. In the future, changes in the assumptions or the discount rate could produce a material non-cash goodwill impairment.

In the second quarter of 2022, we performed our annual goodwill impairment test on all six reporting units using an income approach to estimate the fair values of each reporting unit. Estimated cash flows used in the income approach were based on management's projections as of April 1, 2022. The discount rate applied to these cash flows was 10%.

As a result of the annual goodwill impairment test of the six reporting units, no goodwill impairment was recognized. The fair values of four of the Company's reporting units were substantially in excess of the respective reporting units' carrying value. The Issuer Services reporting unit, with $2.4 billion of allocated goodwill, which is one of the two reporting units in the Securities Services business segment, exceeded its carrying value by approximately 10%. The Investment Management reporting unit, with $7.2 billion of allocated goodwill, which is one of the two reporting units in the Investment and Wealth Management segment, exceeded its carrying value by approximately 6%.

An interim test is performed when events or circumstances occur that may indicate that it is more likely than not that the fair value of any reporting unit may be less than its carrying value.

In the third quarter 2022, due to decreases in market values and the related outlook as well as increased market interest rates, we performed an interim goodwill impairment test of the Investment Management reporting unit which had $7.0 billion of allocated goodwill. The fair value of the Investment Management reporting unit was determined to be 7% below its carrying value, resulting in a goodwill impairment charge of $680 million. This goodwill impairment represents a non-cash charge and did not affect BNY Mellon's liquidity position, tangible common equity or regulatory capital ratios. The cash flow estimates for the Investment Management reporting unit are impacted by projections of the level and mix of assets under management, market values, operating margins and long-term growth rates.

We determined the fair value of the Investment Management reporting unit using an income approach based on management's projections as of Sept. 30, 2022. The discount rate applied to these cash flows was 10.5% compared with the 10% discount rate used in the annual impairment test conducted in the second quarter of 2022. The increase was driven by a higher risk free rate. In the third quarter of 2022, we determined it was not necessary to perform an interim goodwill impairment test for our other reporting units.

In the fourth quarter of 2022, due to results of the third quarter 2022 interim impairment test and the macroeconomic conditions, we performed an additional interim goodwill impairment test of the Investment Management reporting unit, which had $6.0 billion of allocated goodwill after the sale of Alcentra on Nov. 1, 2022. The fair value of the Investment Management reporting unit exceeded its carrying value by approximately 3%. We determined the fair value of the Investment Management reporting unit using an income approach based on management's projections as of Dec. 31, 2022. The discount rate applied to these cash flows was 10.5%.

As of Dec. 31, 2022, if the discount rate applied to the estimated cash flows was increased or decreased by 25 basis points, the fair value of the Investment Management reporting unit would decrease or increase by 4%, respectively. Similarly, if the long-term growth rate was increased or decreased by 10 basis points, the fair value of the Investment Management reporting unit would increase or decrease by approximately 1%, respectively.

Intangible assets

Key judgments in accounting for intangible assets include useful life and classification between goodwill and indefinite-lived intangible assets or other intangible assets requiring amortization.

Indefinite-lived intangible assets ($2.6 billion at Dec. 31, 2022) are evaluated for impairment at least annually by comparing their fair values, estimated using discounted cash flow analyses, to their carrying values. As a result of the annual evaluation, no impairment was recognized, however, a $700 million indefinite-lived intangible asset related to customer relationships in the Investment Management business exceeded its carrying value by approximately 3%.

Other amortizing intangible assets ($329 million at Dec. 31, 2022) are evaluated for impairment if events and circumstances indicate a possible impairment. Such evaluation of other intangible assets would be initially based on undiscounted cash flow projections.

See Notes 1 and 7 of the Notes to Consolidated Financial Statements for additional information regarding goodwill, intangible assets and the annual and interim impairment testing.

Litigation and regulatory contingencies

Significant estimates and judgments are required in establishing an accrued liability for litigation and regulatory contingencies. For additional information on our policy, see "Legal proceedings" in Note 22 of the Notes to Consolidated Financial Statements.

Consolidated balance sheet review

One of our key risk management objectives is to maintain a balance sheet that remains strong throughout market cycles to meet the expectations of our major stakeholders, including our shareholders, clients, creditors and regulators.

We also seek to undertake overall liquidity risk, including intraday liquidity risk, that stays within our risk appetite. The objective of our balance sheet management strategy is to maintain a balance sheet that is characterized by strong liquidity and asset quality, ready access to external funding sources at competitive rates and a strong capital structure that supports our risk-taking activities and is adequate to absorb potential losses. In managing the balance sheet, appropriate consideration is given to balancing the competing needs of maintaining sufficient levels of liquidity and complying with applicable regulations and supervisory expectations while optimizing profitability.

At Dec. 31, 2022, total assets were $406 billion, compared with $444 billion at Dec. 31, 2021. The decrease in total assets was primarily driven by lower securities and interest-bearing deposits with the Federal Reserve and other central banks, partially offset by higher other assets. Deposit liabilities totaled $279 billion at Dec. 31, 2022, compared with $320 billion at Dec. 31, 2021. The decrease primarily reflects lower noninterest-bearing (principally U.S. offices), interest-bearing deposits in U.S. offices and interest-bearing deposits in Non-U.S. offices. Total interest-bearing deposit liabilities as a percentage of total interest-earning assets were 58% at Dec. 31, 2022 and 60% at Dec. 31, 2021.

At Dec. 31, 2022, available funds totaled $138 billion and includes cash and due from banks, interest-bearing deposits with the Federal Reserve and other central banks, interest-bearing deposits with banks and federal funds sold and securities purchased under resale agreements. This compares with available funds of $155 billion at Dec. 31, 2021. Total available funds as a percentage of total assets were 34% at Dec. 31, 2022 and 35% at Dec. 31, 2021. For additional information on our available funds, see "Liquidity and dividends."

Securities were $143 billion, or 35% of total assets, at Dec. 31, 2022, compared with $159 billion, or 36% of total assets, at Dec. 31, 2021. The decrease primarily reflects unrealized pre-tax losses and lower agency residential mortgage-backed securities ("RMBS"), partially offset by higher U.S. Treasury securities. For additional information on our securities portfolio, see "Securities" and Note 4 of the Notes to Consolidated Financial Statements.

Loans were $66 billion, or 16% of total assets, at Dec. 31, 2022, compared with $68 billion, or 15% of total assets, at Dec. 31, 2021. The decrease was primarily driven by lower margin loans, partially offset by higher overdrafts, capital call financing and wealth management mortgages. For additional information on our loan portfolio, see "Loans" and Note 5 of the Notes to Consolidated Financial Statements.

Long-term debt totaled $30 billion at Dec. 31, 2022 and $26 billion at Dec. 31, 2021. Issuances were partially offset by redemptions and maturities and a decrease in the fair value of hedged long-term debt. For additional information on long-term debt, see "Liquidity and dividends" and Note 13 of the Notes to Consolidated Financial Statements.

The Bank of New York Mellon Corporation total shareholders' equity decreased to $41 billion at Dec. 31, 2022 from $43 billion at Dec. 31, 2021. For additional information, see "Capital" and Note 15 of the Notes to Consolidated Financial Statements.

Securities

In the discussion of our securities portfolio, we have included certain credit ratings information because the information can indicate the degree of credit risk to which we are exposed. Significant changes in ratings classifications could indicate increased credit risk for us and could be accompanied by an increase in the allowance for credit losses and/or a reduction in the fair value of our securities portfolio.

The following table shows the distribution of our total securities portfolio.

Securities portfolio	Dec. 31, 2021	2022 change in	**Dec. 31, 2022**		Fair value as a			Ratings *(c)*				
(dollars in millions)	Fair value	unrealized gain (loss)	Amortized cost *(a)*	Fair value	% of amortized cost *(a)*	Unrealized gain (loss)	% Floating rate *(b)*	AAA/ AA-	A+/ A-	BBB+/ BBB-	BB+ and lower	Not rated
U.S. Treasury	$ 40,582	$ (1,462)	**$ 42,966**	**$ 41,503**	97 %	$ (1,463)	51 %	100 %	— %	— %	— %	— %
Agency RMBS	50,735	(4,895)	**43,576**	**38,916**	89	(4,660)	15	100	—	—	—	—
Agency commercial mortgage-backed securities ("MBS")	12,291	(927)	**12,670**	**11,864**	94	(806)	42	100	—	—	—	—
Sovereign debt/sovereign guaranteed *(d)*	14,312	(561)	**12,294**	**11,756**	96	(538)	22	90	5	4	1	—
Supranational	7,646	(267)	**8,572**	**8,298**	97	(274)	64	100	—	—	—	—
Collateralized loan obligations ("CLOs")	5,421	(126)	**6,429**	**6,300**	98	(129)	100	100	—	—	—	—
U.S. government agencies	5,420	(514)	**6,671**	**6,115**	92	(556)	36	100	—	—	—	—
Foreign covered bonds *(e)*	6,238	(267)	**6,041**	**5,776**	96	(265)	57	100	—	—	—	—
Non-agency commercial MBS	3,114	(311)	**3,334**	**3,054**	92	(280)	54	100	—	—	—	—
Foreign government agencies *(f)*	2,686	(114)	**2,429**	**2,307**	95	(122)	34	95	5	—	—	—
Non-agency RMBS	2,793	(276)	**2,227**	**2,060**	93	(167)	50	85	3	—	7	5
Other asset-backed securities ("ABS")	2,190	(109)	**1,443**	**1,319**	91	(124)	19	100	—	—	—	—
State and political subdivisions	2,529	26	**25**	**23**	93	(2)	51	1	52	1	—	46
Corporate bonds	2,066	33	**—**	**—**	—	—	—	—	—	—	—	—
Other	1	—	**1**	**1**	100	—	—	—	—	—	—	100
Total securities	$ 158,024 *(g)*	$ (9,770)	**$ 148,678**	**$ 139,292** *(g)*	94 %	$ (9,386) *(g)(h)*	40 %	99 %	1 %	— %	— %	— %

(a) Amortized cost reflects historical impairments, and is net of the allowance for credit losses.
(b) Includes the impact of hedges.
(c) Represents ratings by Standard & Poor's ("S&P") or the equivalent.
(d) Primarily consists of exposure to Germany, United Kingdom, France, Singapore, Canada and Italy.
(e) Primarily consists of exposure to Canada, United Kingdom, Australia, Germany and Norway.
(f) Primarily consists of exposure to Canada, Norway, Netherlands, Sweden, France and Denmark.
(g) Includes net unrealized losses on derivatives hedging securities available-for-sale (including terminated hedges) of $590 million at Dec. 31, 2021 and net unrealized gain (including terminated hedges) of $2,678 million at Dec. 31, 2022.
(h) At Dec. 31, 2022, net unrealized losses of $3,184 million related to available-for-sale securities, net of hedges, and $6,202 related to held-to-maturity securities.

The fair value of our securities portfolio, including related hedges, was $139.3 billion at Dec. 31, 2022, compared with $158.0 billion at Dec. 31, 2021. The decrease primarily reflects unrealized pre-tax losses and lower agency RMBS, partially offset by an increase in U.S. Treasury securities.

At Dec. 31, 2022, the securities portfolio had a net unrealized loss, including the impact of related hedges, of $9.4 billion, compared with a net unrealized gain, including the impact of related hedges, of $384 million at Dec. 31, 2021. The increase in the net unrealized loss, including the impact of hedges, was primarily driven by higher market interest rates.

The fair value of the available-for-sale securities totaled $89.3 billion at Dec. 31, 2022, net of hedges, or 64% of the securities portfolio, net of hedges. The fair value of the held-to-maturity securities totaled $50.0 billion at Dec. 31, 2022, or 36% of the securities portfolio.

The unrealized loss (after-tax) on our available-for-sale securities portfolio, net of hedges, included in accumulated other comprehensive income was $2.4 billion at Dec. 31, 2022, compared with an unrealized gain (after-tax), net of hedges, of $362 million at Dec. 31, 2021. The increase in the unrealized loss, net of tax, was primarily driven by higher market interest rates.

At Dec. 31, 2022, 99% of the securities in our portfolio were rated AAA/AA-, compared with 96% at Dec. 31, 2021.

See Note 4 of the Notes to Consolidated Financial Statements for the pre-tax net securities gains (losses) by security type. See Note 20 of the Notes to Consolidated Financial Statements for securities by level in the fair value hierarchy.

The following table presents the amortizable purchase premium (net of discount) related to the securities portfolio and accretable discount related to the 2009 restructuring of the securities portfolio.

Net premium amortization and discount accretion of securities *(a)* *(dollars in millions)*		**2022**	2021	2020
Amortizable purchase premium (net of discount) relating to securities:				
Balance at year-end	**$**	**1,151**	$ 1,972	$ 2,283
Estimated average life remaining at year-end *(in years)*		**4.5**	4.4	3.9
Amortization	**$**	**387**	$ 698	$ 568
Accretable discount related to the prior restructuring of the securities portfolio:				
Balance at year-end	**$**	**42**	$ 109	$ 130
Estimated average life remaining at year-end *(in years)*		**8.3**	6.1	5.6
Accretion	**$**	**25**	$ 43	$ 38

(a) Amortization of purchase premium decreases net interest revenue while accretion of discount increases net interest revenue. Both are recorded on a level yield basis.

Equity investments

We have several equity investments recorded in other assets. These include equity method investments, including renewable energy, investments in qualified affordable housing projects, Federal Reserve Bank stock, seed capital and other investments. The following table presents the carrying values at Dec. 31, 2022 and Dec. 31, 2021.

Equity investments *(in millions)*		Dec. 31, **2022**	2021
Renewable energy investments	**$**	**871**	$ 1,027
Qualified affordable housing project investments		**1,298**	1,153
Equity method investments:			
CIBC Mellon		**545**	687
Siguler Guff		**242**	252
Innocap Investment Management Inc.		**16**	—
Total equity method investments		**803**	939
Federal Reserve Bank stock		**478**	472
Other equity investments *(a)*		**695**	449
Seed capital *(b)*		**218**	357
Federal Home Loan Bank stock		**6**	7
Total equity investments	**$**	**4,369**	$ 4,404

(a) Includes strategic equity, private equity and other investments.
(b) Includes investments in BNY Mellon funds which hedge deferred incentive awards.

For additional information on the fair value of certain seed capital investments and our private equity investments, see Note 8 of the Notes to Consolidated Financial Statements.

Renewable energy investments

We invest in renewable energy projects to receive an expected after-tax return, which consists of allocated renewable energy tax credits, tax deductions and cash distributions based on the operations of the project. The pre-tax losses on these investments are recorded in investment and other revenue on the consolidated income statement. The corresponding tax benefits and credits are recorded to the provision for income taxes on the consolidated income statement.

Loans

Total exposure – consolidated	**Dec. 31, 2022**			Dec. 31, 2021		
(in billions)	**Loans**	**Unfunded commitments**	**Total exposure**	Loans	Unfunded commitments	Total exposure
Financial institutions	**$ 9.7**	**$ 31.7**	**$ 41.4**	$ 10.2	$ 30.6	$ 40.8
Commercial	**1.7**	**11.7**	**13.4**	2.1	11.9	14.0
Wealth management loans	**10.3**	**0.6**	**10.9**	9.8	0.5	10.3
Wealth management mortgages	**9.0**	**0.2**	**9.2**	8.2	0.4	8.6
Commercial real estate	**6.2**	**3.9**	**10.1**	6.0	3.3	9.3
Lease financings	**0.7**	**—**	**0.7**	0.7	—	0.7
Other residential mortgages	**0.4**	**—**	**0.4**	0.3	—	0.3
Overdrafts	**4.8**	**—**	**4.8**	3.1	—	3.1
Capital call financing	**3.4**	**3.5**	**6.9**	2.3	1.5	3.8
Other	**3.0**	**—**	**3.0**	2.6	—	2.6
Margin loans	**16.9**	**—**	**16.9**	22.5	—	22.5
Total	**$ 66.1**	**$ 51.6**	**$ 117.7**	$ 67.8	$ 48.2	$ 116.0

At Dec. 31, 2022, total lending-related exposure was $117.7 billion, an increase of 1% compared with Dec. 31, 2021, primarily reflecting higher exposure in the capital call financing portfolio, higher overdrafts and higher exposure to the commercial real estate, wealth management loans, wealth management mortgages and financial institutions portfolios, partially offset by lower margin loans.

Our financial institutions and commercial portfolios comprise our largest concentrated risk. These portfolios comprised 47% of our total exposure at both Dec. 31, 2022 and Dec. 31, 2021. Additionally, most of our overdrafts relate to financial institutions.

Financial institutions

The financial institutions portfolio is shown below.

Financial institutions portfolio exposure	**Dec. 31, 2022**					Dec. 31, 2021		
(dollars in billions)	**Loans**	**Unfunded commitments**	**Total exposure**	**% Inv. grade**	**% due <1 yr.**	Loans	Unfunded commitments	Total exposure
Securities industry	**$ 1.6**	**$ 17.5**	**$ 19.1**	**96 %**	**98 %**	$ 1.7	$ 17.5	$ 19.2
Asset managers	**1.6**	**7.6**	**9.2**	**98**	**84**	1.7	7.1	8.8
Banks	**6.1**	**1.5**	**7.6**	**86**	**97**	5.8	1.5	7.3
Insurance	**0.1**	**3.8**	**3.9**	**100**	**12**	0.2	3.4	3.6
Government	**—**	**0.2**	**0.2**	**100**	**49**	0.1	0.2	0.3
Other	**0.3**	**1.1**	**1.4**	**98**	**43**	0.7	0.9	1.6
Total	**$ 9.7**	**$ 31.7**	**$ 41.4**	**95 %**	**85 %**	$ 10.2	$ 30.6	$ 40.8

The financial institutions portfolio exposure was $41.4 billion at Dec. 31, 2022, an increase of 1% compared with Dec. 31, 2021, primarily reflecting higher exposure in the asset managers, banks and insurance portfolios, partially offset by lower exposure in the other portfolio.

Financial institution exposures are high-quality, with 95% of the exposures meeting the investment grade equivalent criteria of our internal credit rating classification at Dec. 31, 2022. Each customer is assigned an internal credit rating, which is mapped to an equivalent external rating agency grade based upon a number of dimensions, which are continually evaluated and may change over time. For ratings of non-U.S. counterparties, our internal credit rating is generally capped at a rating equivalent to the sovereign rating of the country where the counterparty resides, regardless of the internal credit rating assigned to the counterparty or the underlying collateral.

The exposure to financial institutions is generally short-term, with 85% of the exposures expiring

within one year. At Dec. 31, 2022 and Dec. 31, 2021, 17% of the exposure to financial institutions had an expiration within 90 days.

In addition, 64% of the financial institutions exposure is secured at Dec. 31, 2022. For example, securities industry clients and asset managers often borrow against marketable securities held in custody.

At Dec. 31, 2022, the secured intraday credit provided to dealers in connection with their tri-party repo activity totaled $16.1 billion and was included in the securities industry portfolio. Dealers secure the outstanding intraday credit with high-quality liquid collateral having a market value in excess of the amount of the outstanding credit. Secured intraday credit facilities represent approximately 39% of the exposure in the financial institutions portfolio and are reviewed and reapproved annually.

The asset managers portfolio exposure is high-quality, with 98% of the exposures meeting our investment grade equivalent ratings criteria as of Dec. 31, 2022. These exposures are generally short-term liquidity facilities, with the majority to regulated mutual funds.

Our banks portfolio exposure primarily relates to our global trade finance. These exposures are short-term in nature, with 97% due in less than one year. The investment grade percentage of our banks exposure was 86% at Dec. 31, 2022, compared with 88% at Dec. 31, 2021. Our non-investment grade exposures are primarily trade finance loans in Brazil.

Commercial

The commercial portfolio is presented below.

Commercial portfolio exposure	**Dec. 31, 2022**					Dec. 31, 2021		
(dollars in billions)	**Loans**	**Unfunded commitments**	**Total exposure**	**% Inv. grade**	**% due <1 yr.**	Loans	Unfunded commitments	Total exposure
Manufacturing	**$ 0.5**	**$ 4.1**	**$ 4.6**	**96 %**	**21 %**	$ 0.6	$ 3.9	$ 4.5
Energy and utilities	**0.3**	**3.7**	**4.0**	**94**	**9**	0.4	3.9	4.3
Services and other	**0.8**	**3.2**	**4.0**	**96**	**29**	1.0	3.2	4.2
Media and telecom	**0.1**	**0.7**	**0.8**	**88**	—	0.1	0.9	1.0
Total	**$ 1.7**	**$ 11.7**	**$ 13.4**	**95 %**	**19 %**	$ 2.1	$ 11.9	$ 14.0

The commercial portfolio exposure was $13.4 billion at Dec. 31, 2022, a decrease of 4% from Dec. 31, 2021, primarily driven by lower exposure in the energy and utilities, media and telecom and services and other portfolios.

Our credit strategy is to focus on investment grade clients that are active users of our non-credit services. The following table summarizes the percentage of the financial institutions and commercial portfolio exposures that are investment grade.

Investment grade percentages	Dec. 31,		
	2022	2021	2020
Financial institutions	**95 %**	96 %	95 %
Commercial	**95 %**	94 %	92 %

Wealth management loans

Our wealth management loan exposure was $10.9 billion at Dec. 31, 2022, compared with $10.3 billion at Dec. 31, 2021. Wealth management loans primarily consist of loans to high-net-worth individuals, a majority of which are secured by the customers' investment management accounts or custody accounts.

Wealth management mortgages

Our wealth management mortgage exposure was $9.2 billion at Dec. 31, 2022, compared with $8.6 billion at Dec. 31, 2021. Wealth management mortgages primarily consist of loans to high-net-worth individuals, which are secured by residential property. Wealth management mortgages are primarily interest-only, adjustable-rate mortgages with a weighted-average loan-to-value ratio of 61% at origination. Less than 1% of the mortgages were past due at Dec. 31, 2022.

At Dec. 31, 2022, the wealth management mortgage portfolio consisted of the following geographic concentrations: California – 22%; New York – 15%; Florida – 10%; Massachusetts – 8%; and other – 45%.

Commercial real estate

The composition of the commercial real estate portfolio by asset class, including percentage secured, is presented below.

Composition of commercial real estate portfolio by asset class	**Dec. 31, 2022**		Dec. 31, 2021	
(dollars in billions)	**Total exposure**	**Percentage secured** *(a)*	Total exposure	Percentage secured *(a)*
Residential	**$ 4.1**	**85 %**	$ 3.6	81 %
Office	**2.8**	**75**	2.6	77
Retail	**0.9**	**58**	0.9	58
Mixed-use	**0.8**	**33**	0.7	37
Hotels	**0.6**	**42**	0.5	23
Healthcare	**0.4**	**49**	0.4	25
Other	**0.5**	**66**	0.6	45
Total commercial real estate	**$ 10.1**	**71 %**	$ 9.3	66 %

(a) Represents the percentage of secured exposure in each asset class.

Our commercial real estate exposure totaled $10.1 billion at Dec. 31, 2022 and $9.3 billion at Dec. 31, 2021. Our income-producing commercial real estate facilities are focused on experienced owners and are structured with moderate leverage based on existing cash flows. Our commercial real estate lending activities also include construction and renovation facilities. Our client base consists of experienced developers and long-term holders of real estate assets. Loans are approved on the basis of existing or projected cash flows and supported by appraisals and knowledge of local market conditions. Development loans are structured with moderate leverage, and in many instances, involve some level of recourse to the developer.

At Dec. 31, 2022, the unsecured portfolio consisted of real estate investment trusts ("REITs") and real estate operating companies, which are both primarily investment grade.

At Dec. 31, 2022, our commercial real estate portfolio consisted of the following concentrations: New York metro – 36%; REITs and real estate operating companies – 29%; and other – 35%.

Lease financings

The lease financings portfolio exposure totaled $657 million at Dec. 31, 2022 and $731 million at Dec. 31, 2021. At Dec. 31, 2022, approximately 99% of leasing exposure was investment grade, or investment grade equivalent and consisted of exposures backed by well-diversified assets, primarily real estate and large-ticket transportation equipment. The largest components of our lease residual value exposure were to aircraft and freight-related rail cars. Assets are both domestic and foreign-based, with primary concentrations in Germany and the U.S.

Approximately 78% of the portfolio is additionally secured by highly rated securities and/or secured by letters of credit from investment grade issuers. Counterparty rating equivalents at Dec. 31, 2022, were as follows:

- 40% were A or better, or equivalent;
- 59% were BBB; and
- 1% were non-investment grade.

Other residential mortgages

The other residential mortgages portfolio primarily consists of 1-4 family residential mortgage loans and totaled $345 million at Dec. 31, 2022 and $299 million at Dec. 31, 2021. Included in this portfolio at Dec. 31, 2022 were $97 million of fixed rate jumbo mortgage loans purchased in 2022 with a weighted-average loan-to-value ratio of 70% at origination.

Overdrafts

Overdrafts primarily relate to custody and securities clearance clients and are generally repaid within two business days.

Capital call financing

Capital call financing includes loans to private equity funds that are secured by the fund investors' capital commitments and the funds' right to call capital.

Other loans

Other loans primarily include loans to consumers that are fully collateralized with equities, mutual funds and fixed-income securities.

Margin loans

Margin loan exposure of $16.9 billion at Dec. 31, 2022 and $22.5 billion at Dec. 31, 2021 was collateralized with marketable securities. Borrowers are required to maintain a daily collateral margin in excess of 100% of the value of the loan. Margin loans included $6.0 billion at Dec. 31, 2022 and $7.7 billion at Dec. 31, 2021 related to a term loan program that offers fully collateralized loans to broker-dealers.

Maturity of loan portfolio

The following table shows the maturity structure of our loan portfolio.

Maturity of loan portfolio at Dec. 31, 2022 *(in millions)*	Within 1 year	Between 1 and 5 years	Between 5 and 15 years	After 15 years	Total
Commercial	$ 929	$ 631	$ 172	$ —	$ 1,732
Commercial real estate	1,002	3,723	1,501	—	6,226
Financial institutions	8,561	655	468	—	9,684
Lease financings	22	108	527	—	657
Wealth management loans	10,068	167	67	—	10,302
Wealth management mortgages	37	4	411	8,514	8,966
Other residential mortgages	—	7	154	184	345
Overdrafts	4,839	—	—	—	4,839
Capital call financing	1,497	1,912	29	—	3,438
Other	2,930	—	11	—	2,941
Margin loans	16,683	250	—	—	16,933
Total	$ 46,568	$ 7,457	$ 3,340	$ 8,698	$ 66,063

Interest rate characteristic

The following table shows the interest rate characteristic of loans maturing after one year.

Interest rate characteristic of loan portfolio maturing > 1 year at Dec. 31, 2022 *(in millions)*	Fixed rates	Floating rates	Total
Commercial	$ 71	$ 732	$ 803
Commercial real estate	185	5,039	5,224
Financial institutions	5	1,118	1,123
Lease financings	635	—	635
Wealth management loans	18	216	234
Wealth management mortgages	3,629	5,300	8,929
Other residential mortgages	315	30	345
Capital call financing	—	1,941	1,941
Other	—	11	11
Margin Loans	—	250	250
Total	$ 4,858	$ 14,637	$ 19,495

Allowance for credit losses

Our credit strategy is to focus on investment grade clients who are active users of our non-credit services. Our primary exposure to the credit risk of a customer consists of funded loans, unfunded contractual commitments to lend, standby letters of credit ("SBLC") and overdrafts associated with our custody and securities clearance businesses.

The following table presents the changes in our allowance for credit losses.

Allowance for credit losses activity *(dollars in millions)*		**2022**		2021	
Beginning balance of allowance for credit losses	**$**	**260**	$	501	
Provision for credit losses		**39**		(231)	
Charge-offs:					
Loans:					
Wealth management mortgages		**—**		(1)	
Other residential mortgages		**—**		(1)	
Other loans		**—**		(16)	
Other financial instruments		**(11)**		—	
Total charge-offs		**(11)**		(18)	
Recoveries:					
Loans:					
Financial institutions		**—**		2	
Other residential mortgages		**4**		6	
Other financial instruments		**—**		—	
Total recoveries		**4**		8	
Net (charge-offs)		**(7)**		(10)	
Ending balance of allowance for credit losses	**$**	**292**	$	260	
Allowance for loan losses	**$**	**176**	$	196	
Allowance for lending-related commitments		**78**		45	
Allowance for financial instruments *(a)*		**38**		19	
Total allowance for credit losses	**$**	**292**	$	260	
Total loans	**$**	**66,063**	$	67,787	
Average loans outstanding	**$**	**67,825**	$	60,814	
Net (charge-offs) recoveries of loans to average loans outstanding		**(0.01)%**		(0.02)%	
Net (charge-offs) recoveries of loans to total allowance for loan losses and lending-related commitments		**(2.76)**		(4.15)	
Allowance for loan losses as a percentage of total loans		**0.27**		0.29	
Allowance for loan losses and lending-related commitments as a percentage of total loans		**0.38**		0.36	
Net (charge-offs) to average loans by loan category: *(b)*					
Wealth management mortgages:		**N/A**		(0.01)%	
Net (charge-offs) during the year		**N/A**	$	(1)	
Average loans outstanding		**N/A**	$	8,046	*(b)*
Other loans:		**N/A**		(0.77)%	
Net (charge-offs) during the year		**N/A**	$	(16)	
Average loans outstanding		**N/A**	$	2,088	*(b)*

(a) Includes allowance for credit losses on federal funds sold and securities purchased under resale agreements, available-for-sale securities, held-to-maturity securities, accounts receivable, cash and due from banks and interest-bearing deposits with banks.

(b) Average loans based on month-end balances.

N/A – Not applicable. There were no net charge-offs in 2022.

The provision for credit losses was $39 million in 2022 compared with a benefit of $231 million in 2021. The increase was primarily driven by changes in the macroeconomic forecast.

The allowance for loan losses and allowance for lending-related commitments represent management's estimate of lifetime expected losses in our credit portfolio. This evaluation process is subject to numerous estimates and judgments. To the extent actual results differ from forecasts or management's judgment, the allowance for credit losses may be greater or less than future charge-offs.

Based on an evaluation of the allowance for credit losses as discussed in "Critical accounting estimates" and Note 1 of the Notes to Consolidated Financial Statements, we have allocated our allowance for loans and lending-related commitments as presented below.

Allocation of allowance for loan losses and lending-related commitments *(a)*

	Dec. 31,			
	2022		2021	
(dollars in millions)	**$**	**%**	$	%
Commercial real estate	**$ 184**	**72 %**	$ 199	82 %
Financial institutions	**24**	**9**	13	5
Commercial	**18**	**7**	12	5
Other residential mortgages	**8**	**3**	7	3
Wealth management mortgages	**12**	**5**	6	2
Capital call financing	**6**	**2**	2	1
Wealth management loans	**1**	**1**	1	1
Lease financings	**1**	**1**	1	1
Total	**$ 254**	**100 %**	$ 241	100 %

(a) The allowance allocated to margins loans, overdrafts and other loans was insignificant at both Dec. 31, 2022 and Dec. 31, 2021. We have rarely suffered a loss on these types of loans.

The allocation of the allowance for credit losses is inherently judgmental, and the entire allowance for credit losses is available to absorb credit losses regardless of the nature of the losses.

Nonperforming assets

The table below presents our nonperforming assets.

Nonperforming assets	Dec. 31,	
(dollars in millions)	**2022**	2021
Nonperforming loans:		
Other residential mortgages	**$ 31**	$ 39
Wealth management mortgages	**22**	25
Commercial real estate	**54**	54
Total nonperforming loans	**107**	118
Other assets owned	**2**	2
Total nonperforming assets	**$ 109**	$ 120
Nonperforming assets ratio	**0.16 %**	0.18 %
Allowance for loan losses/nonperforming loans	**164.5**	166.1
Allowance for loan losses/nonperforming assets	**161.5**	163.3
Allowance for credit losses/nonperforming loans	**237.4**	204.2
Allowance for credit losses/nonperforming assets	**233.0**	200.8

Nonperforming assets decreased $11 million in 2022 compared with 2021, primarily reflecting lower other residential mortgages and wealth management mortgage loans.

See "Nonperforming assets" in Note 1 of the Notes to Consolidated Financial Statements for our policy for placing loans on nonaccrual status.

Deposits

We receive client deposits through the businesses in the Securities Services, Market and Wealth Services and Investment and Wealth Management segments and we rely on those deposits as a low-cost and stable source of funding.

Total deposits were $279.0 billion at Dec. 31, 2022, a decrease of 13%, compared with $319.7 billion at Dec. 31, 2021. The decrease primarily reflects lower non-interest bearing deposits (principally U.S. offices), interest-bearing deposits in U.S. offices and interest-bearing deposits in non-U.S. offices.

Noninterest-bearing deposits were $78.0 billion at Dec. 31, 2022, compared with $93.7 billion at Dec. 31, 2021. Interest-bearing deposits were primarily demand deposits and totaled $201.0 billion at Dec. 31, 2022, compared with $226.0 billion at Dec. 31, 2021.

The aggregate amount of deposits by foreign customers in domestic offices was $61.2 billion at Dec. 31, 2022 and $65.4 billion at Dec. 31, 2021.

Deposits in foreign offices totaled $98.3 billion at Dec. 31, 2022 and $112.1 billion at Dec. 31, 2021. These deposits were primarily overnight deposits.

Uninsured deposits are the portion of domestic deposits accounts that exceed the Federal Deposit Insurance Corporation ("FDIC") insurance limit. Uninsured deposits in domestic deposit accounts are generally demand deposits and totaled $156.6 billion at Dec. 31, 2022 and $186.2 billion at Dec. 31, 2021.

The following table presents the amount of uninsured domestic and foreign time deposits disaggregated by time remaining until maturity.

Uninsured time deposits at Dec. 31, 2022 *(in millions)*	Domestic	Foreign
Less than 3 months	$ 226	$ 922
3 to 6 months	42	5
6-12 months	75	10
Over 12 months	19	—
Total	**$ 362**	**$ 937**

Short-term borrowings

We fund ourselves primarily through deposits and, to a lesser extent, other short-term borrowings and long-term debt. Short-term borrowings consist of federal funds purchased and securities sold under repurchase agreements, payables to customers and broker-dealers, commercial paper and other borrowed funds. Certain short-term borrowings, for example, securities sold under repurchase agreements, require the delivery of securities as collateral.

Federal funds purchased and securities sold under repurchase agreements include repurchase agreement activity with the Fixed Income Clearing Corporation ("FICC"), where we record interest expense gross, but the ending and average balances reflect the impact of offsetting under enforceable netting agreements. This activity primarily relates to government securities collateralized resale and repurchase agreements executed with clients that are novated to and settle with the FICC.

Payables to customers and broker-dealers represent funds awaiting reinvestment and short sale proceeds payable on demand. Payables to customers and broker-dealers are driven by customer trading activity and market volatility.

The Bank of New York Mellon may issue commercial paper that matures within 397 days from the date of issue and is not redeemable prior to maturity or subject to voluntary prepayment.

Other borrowed funds primarily include overdrafts of sub-custodian account balances in our Securities Services businesses, finance lease liabilities and borrowings under lines of credit by our Pershing subsidiaries. Overdrafts typically relate to timing differences for settlements.

Liquidity and dividends

BNY Mellon defines liquidity as the ability of the Parent and its subsidiaries to access funding or convert assets to cash quickly and efficiently, or to roll over or issue new debt, especially during periods of market stress, at a reasonable cost, and in order to meet its short-term (up to one year) obligations. Funding liquidity risk is the risk that BNY Mellon cannot meet its cash and collateral obligations at a reasonable cost for both expected and unexpected cash flow and collateral needs without adversely affecting daily operations or our financial condition. Funding liquidity risk can arise from funding mismatches, market constraints from the inability to convert assets into cash, the inability to hold or raise cash, low overnight deposits, deposit run-off or contingent liquidity events.

Changes in economic conditions or exposure to credit, market, operational, legal and reputational risks also can affect BNY Mellon's liquidity risk profile and are considered in our liquidity risk framework. For additional information, see "Risk Management – Liquidity Risk."

The Parent's policy is to have access to sufficient unencumbered cash and cash equivalents at each quarter-end to cover maturities and other forecasted debt redemptions, net interest payments and net tax payments for the following 18-month period, and to provide sufficient collateral to satisfy transactions subject to Section 23A of the Federal Reserve Act. As of Dec. 31, 2022, the Parent was in compliance with this policy.

We monitor and control liquidity exposures and funding needs within and across significant legal

entities, branches, currencies and business lines, taking into account, among other factors, any applicable restrictions on the transfer of liquidity among entities.

BNY Mellon also manages potential intraday liquidity risks. We monitor and manage intraday liquidity against existing and expected intraday liquid resources (such as cash balances, remaining intraday credit capacity, intraday contingency funding and available collateral) to enable BNY Mellon to meet its intraday obligations under normal and reasonably severe stressed conditions.

We define available funds for internal liquidity management purposes as cash and due from banks, interest-bearing deposits with the Federal Reserve and other central banks, interest-bearing deposits with banks and federal funds sold and securities purchased under resale agreements. The following table presents our total available funds at period end and on an average basis.

Available funds			Average		
(dollars in millions)	**Dec. 31, 2022**	Dec. 31, 2021	**2022**	2021	2020
Cash and due from banks	**$ 5,030**	$ 6,061	**$ 5,542**	$ 5,922	$ 4,506
Interest-bearing deposits with the Federal Reserve and other central banks	**91,655**	102,467	**97,442**	113,346	94,432
Interest-bearing deposits with banks	**17,169**	16,630	**16,826**	20,757	19,165
Federal funds sold and securities purchased under resale agreements	**24,298**	29,607	**24,953**	28,530	30,768
Total available funds	**$ 138,152**	$ 154,765	**$ 144,763**	$ 168,555	$ 148,871
Total available funds as a percentage of total assets	**34 %**	35 %	**34 %**	37 %	36 %

Total available funds were $138.2 billion at Dec. 31, 2022, compared with $154.8 billion at Dec. 31, 2021. The decrease was primarily due to lower interest-bearing deposits with the Federal Reserve and other central banks and federal funds sold and securities purchased under resale agreements.

Average non-core sources of funds, such as federal funds purchased and securities sold under repurchase agreements, trading liabilities, other borrowed funds and commercial paper, were $16.9 billion for 2022 and $16.7 billion for 2021. The increase primarily reflects higher trading liabilities and other borrowed funds, partially offset by lower federal funds purchased and securities sold under repurchase agreements.

Average interest-bearing domestic deposits were $111.5 billion for 2022 and $124.7 billion for 2021. Average foreign deposits, primarily from our European-based businesses included in the Securities Services and Market and Wealth Services segments, were $101.9 billion for 2022, compared with $112.5 billion for 2021. The decrease primarily reflects client activity.

Average payables to customers and broker-dealers were $17.1 billion for 2022 and $16.9 billion for 2021. Payables to customers and broker-dealers are driven by customer trading activity and market volatility.

Average long-term debt was $27.4 billion for 2022 and $25.8 billion for 2021.

Average noninterest-bearing deposits decreased to $85.7 billion for 2022 from $86.6 billion for 2021, primarily reflecting client activity.

A significant reduction of client activity in our Securities Services and Market and Wealth Services business segments would reduce our access to deposits. See “Asset/liability management” for additional factors that could impact our deposit balances.

Sources of liquidity

The Parent’s major sources of liquidity are access to the debt and equity markets, dividends from its subsidiaries, and cash on hand and cash otherwise made available in business-as-usual circumstances to the Parent through a committed credit facility with our intermediate holding company (“IHC”).

Our ability to access the capital markets on favorable terms, or at all, is partially dependent on our credit ratings, which are as follows:

Credit ratings at Dec. 31, 2022	Moody's	S&P	Fitch	DBRS
Parent:				
Long-term senior debt	A1	A	AA-	AA
Subordinated debt	A2	A-	A	AA (low)
Preferred stock	Baa1	BBB	BBB+	A
Outlook – Parent	Stable	Stable	Stable	Stable
The Bank of New York Mellon:				
Long-term senior debt	Aa2	AA-	AA	AA (high)
Subordinated debt	NR	A	NR	NR
Long-term deposits	Aa1	AA-	AA+	AA (high)
Short-term deposits	P1	A-1+	F1+	R-1 (high)
Commercial paper	P1	A-1+	F1+	R-1 (high)
BNY Mellon, N.A.:				
Long-term senior debt	Aa2 *(a)*	AA-	AA *(a)*	AA (high)
Long-term deposits	Aa1	AA-	AA+	AA (high)
Short-term deposits	P1	A-1+	F1+	R-1 (high)
Outlook – Banks	Stable	Stable	Stable	Stable

(a) Represents senior debt issuer default rating.
NR – Not rated.

Long-term debt totaled $30.5 billion at Dec. 31, 2022 and $25.9 billion at Dec. 31, 2021. Issuances of $10.0 billion were partially offset by redemptions and maturities of $4.0 billion and a decrease in the fair value of hedged long-term debt. The Parent has $5.3 billion of long-term debt that will mature in 2023.

The following table presents the long-term debt issued in 2022.

Debt issuances *(in millions)*		**2022**
5.834% fixed-to-floating callable senior notes due 2033	$	**1,500**
4.414% fixed-to-floating callable senior notes due 2026		**1,250**
5.802% fixed-to-floating callable senior notes due 2028		**1,000**
3.350% fixed rate senior notes due 2025		**950**
2.050% fixed rate senior notes due 2027		**850**
4.289% fixed-to-floating callable senior notes due 2033		**750**
5.224% fixed-to-floating callable senior notes due 2025		**750**
3.430% fixed-to-floating callable senior notes due 2025		**700**
3.992% fixed-to-floating callable senior notes due 2028		**500**
4.596% fixed-to-floating callable senior notes due 2030		**500**
2.500% fixed rate senior notes due 2032		**450**
SOFR + 62bps senior notes due 2025		**400**
3.850% fixed rate senior notes due 2029		**350**
Total debt issuances	$	**9,950**

SOFR – compounded secured overnight financing rate
bps – basis points

In January 2023, the Parent issued $750 million of fixed-to-floating rate senior notes maturing in 2029.

The annual fixed interest rate is 4.543% from issuance to, but excluding, Feb. 1, 2028, and then an annual interest rate of SOFR plus 116.868 basis points. The Parent also issued $750 million of fixed-to-floating rate senior notes maturing in 2034. The annual fixed interest rate is 4.706% from issuance to, but excluding, Feb. 1, 2033, and then an annual interest rate of SOFR plus 151.178 basis points.

The Bank of New York Mellon may issue notes and CDs. At Dec. 31, 2022 and Dec. 31, 2021, $780 million and $30 million, respectively, of notes were outstanding. At Dec. 31, 2022, $122 million of CDs were outstanding. There were no CDs outstanding at Dec. 31, 2021.

The Bank of New York Mellon also issues commercial paper that matures within 397 days from the date of issue and is not redeemable prior to maturity or subject to voluntary prepayment. There was no commercial paper outstanding at Dec. 31, 2022 and Dec. 31, 2021. The average commercial paper outstanding was $5 million for 2022 and $3 million for 2021.

Subsequent to Dec. 31, 2022, our U.S. bank subsidiaries could declare dividends to the Parent of approximately $3.4 billion, without the need for a regulatory waiver. In addition, at Dec. 31, 2022, non-

bank subsidiaries of the Parent had liquid assets of approximately $4.4 billion. Restrictions on our ability to obtain funds from our subsidiaries are discussed in more detail in "Supervision and Regulation – Capital Planning and Stress Testing – Payment of Dividends, Stock Repurchases and Other Capital Distributions" and in Note 19 of the Notes to Consolidated Financial Statements.

Pershing LLC has uncommitted lines of credit in place for liquidity purposes which are guaranteed by the Parent. Pershing LLC has two separate uncommitted lines of credit amounting to $350 million in aggregate. Average borrowings under these lines were less than $1 million, in aggregate, in 2022. Pershing Limited, an indirect UK-based subsidiary of BNY Mellon, has two separate uncommitted lines of credit amounting to $257 million in aggregate. Average borrowings under these lines were $5 million, in aggregate, in 2022.

The double leverage ratio is the ratio of our equity investment in subsidiaries divided by our consolidated Parent company equity, which includes our noncumulative perpetual preferred stock. In short, the double leverage ratio measures the extent to which equity in subsidiaries is financed by Parent company debt. As the double leverage ratio increases, this can reflect greater demands on a company's cash flows in order to service interest payments and debt maturities. BNY Mellon's double leverage ratio is managed in a range considering the high level of unencumbered available liquid assets held in its principal subsidiaries (such as central bank deposit placements and government securities), the Company's cash generating fee-based business model, with fee revenue representing 79% of total revenue in 2022, and the dividend capacity of our banking subsidiaries. Our double leverage ratio was 120.5% at Dec. 31, 2022 and 119.3% at Dec. 31, 2021, and within the range targeted by management.

Uses of funds

The Parent's major uses of funds are repurchases of common stock, payment of dividends, principal and interest payments on its borrowings, acquisitions and additional investments in its subsidiaries.

In 2022, we paid $1.4 billion in dividends on our common and preferred stock. Our common stock dividend payout ratio was 49% for 2022.

In 2022, we repurchased 2.0 million common shares at an average price of $61.08 per common share for a total cost of $124 million.

Liquidity coverage ratio ("LCR")

U.S. regulators have established an LCR that requires certain banking organizations, including BNY Mellon, to maintain a minimum amount of unencumbered high-quality liquid assets ("HQLA") sufficient to withstand the net cash outflow under a hypothetical standardized acute liquidity stress scenario for a 30-day time horizon.

The following table presents BNY Mellon's consolidated HQLA at Dec. 31, 2022, and the average HQLA and average LCR for the fourth quarter of 2022.

Consolidated HQLA and LCR *(dollars in billions)*		**Dec. 31, 2022**
Securities *(a)*	**$**	**106**
Cash *(b)*		**91**
Total consolidated HQLA *(c)*	**$**	**197**
Total consolidated HQLA – average *(c)*	**$**	**200**
Average LCR		**118 %**

(a) Primarily includes securities of U.S. government-sponsored enterprises, U.S. Treasury, sovereign securities, and U.S. agencies.
(b) Primarily includes cash on deposit with central banks.
(c) Consolidated HQLA presented before adjustments. After haircuts and the impact of trapped liquidity, consolidated HQLA totaled $133 billion at Dec. 31, 2022 and averaged $138 billion for the fourth quarter of 2022.

BNY Mellon and each of our affected domestic bank subsidiaries were compliant with the U.S. LCR requirements of at least 100% throughout 2022.

Statement of cash flows

The following summarizes the activity reflected on the consolidated statement of cash flows. While this information may be helpful to highlight certain macro trends and business strategies, the cash flow analysis may not be as relevant when analyzing changes in our net earnings and net assets. We believe that in addition to the traditional cash flow analysis, the discussion related to liquidity and dividends and asset/liability management herein may provide more useful context in evaluating our liquidity position and related activity.

Net cash provided by operating activities was $15.1 billion in 2022, compared with $2.8 billion in 2021. In 2022, cash flows provided by operations primarily resulted from changes in trading assets and liabilities, changes in accruals and other, net and earnings. In 2021, cash flows provided by operations primarily resulted from earnings, partially offset by changes in trading assets and liabilities and changes in accruals and other, net.

Net cash provided by investing activities was $19.9 billion in 2022, compared with $19.7 billion in 2021. In 2022, net cash provided by investing activities primarily reflects changes in interest-bearing deposits with the Federal Reserve and other central banks, a net decrease in the securities portfolio and change in federal funds sold and securities purchased under resale agreements. In 2021, net cash provided by investing activities primarily reflects changes in interest-bearing deposits with the Federal Reserve and other central banks, partially offset by a net change in loans and a net increase in the securities portfolio.

Net cash used for financing activities was $33.7 billion in 2022, compared with $22.0 billion in 2021. In 2022 and 2021, net cash used for financing activities primarily reflects changes in deposits and repayments of long-term debt, partially offset by issuances of long-term debt. In 2021, net cash used for financing activities also reflects common stock repurchases.

Capital

Capital data *(dollars in millions, except per share amounts; common shares in thousands)*		**2022**		2021
At Dec. 31:				
BNY Mellon shareholders' equity to total assets ratio		**10.0 %**		9.7 %
BNY Mellon common shareholders' equity to total assets ratio		**8.8 %**		8.6 %
Total BNY Mellon shareholders' equity	**$**	**40,734**	$	43,034
Total BNY Mellon common shareholders' equity	**$**	**35,896**	$	38,196
BNY Mellon tangible common shareholders' equity – Non-GAAP *(a)*	**$**	**18,686**	$	19,547
Book value per common share	**$**	**44.40**	$	47.50
Tangible book value per common share – Non-GAAP *(a)*	**$**	**23.11**	$	24.31
Closing stock price per common share	**$**	**45.52**	$	58.08
Market capitalization	**$**	**36,800**	$	46,705
Common shares outstanding		**808,445**		804,145
Full-year:				
Cash dividends per common share	**$**	**1.42**	$	1.30
Common dividend payout ratio		**49 %**		32 %
Common dividend yield		**3.1 %**		2.2 %

(a) See "Explanation of GAAP and Non-GAAP financial measures" beginning on page 104 for a reconciliation of GAAP to Non-GAAP.

The Bank of New York Mellon Corporation total shareholders' equity decreased to $40.7 billion at Dec. 31, 2022 from $43.0 billion at Dec. 31, 2021. The decrease primarily reflects unrealized losses on securities available-for-sale, dividend payments and foreign currency translation, partially offset by earnings.

The unrealized loss (after-tax) on our available-for-sale securities portfolio, net of hedges, included in accumulated other comprehensive income was $2.4 billion at Dec. 31, 2022, compared with an unrealized gain (after-tax), net of hedges, of $362 million at Dec. 31, 2021. The increase in the unrealized loss, net of tax, was primarily driven by higher market interest rates.

We repurchased 2.0 million common shares at an average price of $61.08 per common share for a total of $124 million in 2022.

In June 2021, our Board of Directors authorized the repurchase of up to $6.0 billion of common shares over the six quarters beginning in the third quarter of 2021 and continuing through the fourth quarter of 2022.

In January 2023, we announced a share repurchase program approved by our Board of Directors providing for the repurchase of up to $5.0 billion of common shares beginning Jan. 1, 2023. This new share repurchase plan replaced all previously authorized share repurchase plans.

In July 2022, our Board of Directors approved a 9% increase in the quarterly cash dividend on common stock, from $0.34 to $0.37 per share. We began paying the increased quarterly cash dividend in the third quarter of 2022.

Capital adequacy

Regulators establish certain levels of capital for bank holding companies ("BHCs") and banks, including BNY Mellon and our bank subsidiaries, in accordance with established quantitative measurements. For the Parent to maintain its status as a financial holding company ("FHC"), our U.S. bank subsidiaries and BNY Mellon must, among other things, qualify as "well capitalized." As of Dec. 31, 2022 and Dec. 31, 2021, BNY Mellon and our U.S. bank subsidiaries were "well capitalized." Failure to satisfy regulatory standards, including "well capitalized" status or capital adequacy rules more generally, could result in limitations on our activities and adversely affect our financial condition. See the discussion of these matters in "Supervision and Regulation – Regulated Entities of BNY Mellon and Ancillary Regulatory Requirements" and "Risk Factors – Capital and Liquidity Risk – Failure to satisfy regulatory standards, including "well capitalized" and "well managed" status or capital adequacy and liquidity rules more generally, could result in limitations on our activities and adversely affect our business and financial condition."

The U.S. banking agencies' capital rules are based on the framework adopted by the Basel Committee on Banking Supervision ("BCBS"), as amended from time to time. For additional information on these capital requirements, see "Supervision and Regulation."

The table below presents our consolidated and largest bank subsidiary regulatory capital ratios.

Consolidated and largest bank subsidiary regulatory capital ratios	**Dec. 31, 2022**			Dec. 31, 2021
	Well capitalized	Minimum required *(a)*	Capital ratios	Capital ratios
Consolidated regulatory capital ratios: *(b)*				
Advanced Approaches:				
CET1 ratio	N/A *(c)*	8.5 %	**11.2 %**	11.4 %
Tier 1 capital ratio	6 %	10	**14.1**	14.2
Total capital ratio	10	12	**14.9**	15.0
Standardized Approach:				
CET1 ratio	N/A *(c)*	8.5 %	**11.3 %**	11.2 %
Tier 1 capital ratio	6 %	10	**14.4**	14.0
Total capital ratio	10	12	**15.3**	14.9
Tier 1 leverage ratio	N/A *(c)*	4	**5.8**	5.5
SLR *(d)*	N/A *(c)*	5	**6.8**	6.6
The Bank of New York Mellon regulatory capital ratios: *(b)*				
Advanced Approaches:				
CET1 ratio	6.5 %	7 %	**15.6 %**	16.5 %
Tier 1 capital ratio	8	8.5	**15.6**	16.5
Total capital ratio	10	10.5	**15.7**	16.5
Tier 1 leverage ratio	5	4	**6.2**	6.0
SLR *(d)*	6	3	**7.7**	7.6

(a) Minimum requirements for Dec. 31, 2022 include minimum thresholds plus currently applicable buffers. The U.S. global systemically important banks ("G-SIB") surcharge of 1.5% is subject to change. The countercyclical capital buffer is currently set to 0%. The stress capital buffer ("SCB") requirement is 2.5%, equal to the regulatory minimum for Standardized Approach capital ratios.

(b) For our CET1, Tier 1 capital and Total capital ratios, our effective capital ratios under U.S. capital rules are the lower of the ratios as calculated under the Standardized and Advanced Approaches. The Tier 1 leverage ratio is based on Tier 1 capital and quarterly average total assets.

(c) The Federal Reserve's regulations do not establish well capitalized thresholds for these measures for BHCs.

(d) The SLR is based on Tier 1 capital and total leverage exposure, which includes certain off-balance sheet exposures.

Our CET1 ratio determined under the Advanced Approaches was 11.2% at Dec. 31, 2022 and 11.2% at Dec. 31, 2021 under the Standardized Approach. The unchanged ratio primarily reflects capital generated through earnings, lower RWAs and the impact of the Alcentra sale, offset by the net decrease in accumulated other comprehensive income and capital deployed through dividends.

In 2022, we implemented the Standardized Approach for Counterparty Credit Risk ("SA-CCR"), which replaced the current exposure method used to measure derivative counterparty exposure.

The Tier 1 leverage ratio was 5.8% at Dec. 31, 2022, compared with 5.5% at Dec. 31, 2021. The increase was driven by lower average assets, partially offset by a decrease in capital.

Risk-based capital ratios vary depending on the size of the balance sheet at period-end and the levels and types of investments in assets, and leverage ratios vary based on the average size of the balance sheet over the quarter. The balance sheet size fluctuates from period to period based on levels of customer and market activity. In general, when servicing clients are more actively trading securities, deposit balances and the balance sheet as a whole are higher. In addition, when markets experience significant volatility or stress, our balance sheet size may increase considerably as client deposit levels increase.

Our capital ratios are necessarily subject to, among other things, anticipated compliance with all necessary enhancements to model calibration, approval by regulators of certain models used as part of RWA calculations, other refinements, further implementation guidance from regulators, market practices and standards and any changes BNY Mellon may make to its businesses. As a consequence of these factors, our capital ratios may materially change, and may be volatile over time and from period to period.

Under the Advanced Approaches, our operational loss risk model is informed by external losses, including fines and penalties levied against institutions in the financial services industry, particularly those that relate to businesses in which we operate, and as a result external losses have impacted and could in the future impact the amount of capital that we are required to hold.

The following table presents our capital components and RWAs.

Capital components and risk-weighted assets	Dec. 31,	
(in millions)	**2022**	2021
CET1:		
Common shareholders' equity	**$ 35,896**	$ 38,196
Adjustments for:		
Goodwill and intangible assets *(a)*	**(17,210)**	(18,649)
Net pension fund assets	**(317)**	(400)
Embedded goodwill	**(279)**	(300)
Deferred tax assets	**(56)**	(55)
Other	**(2)**	(46)
Total CET1	**18,032**	18,746
Other Tier 1 capital:		
Preferred stock	**4,838**	4,838
Other	**(14)**	(99)
Total Tier 1 capital	**$ 22,856**	$ 23,485
Tier 2 capital:		
Subordinated debt	**$ 1,248**	$ 1,248
Allowance for credit losses	**291**	250
Other	**(11)**	(11)
Total Tier 2 capital – Standardized Approach	**1,528**	1,487
Excess of expected credit losses	**50**	—
Less: Allowance for credit losses	**291**	250
Total Tier 2 capital – Advanced Approaches	**$ 1,287**	$ 1,237
Total capital:		
Standardized Approach	**$ 24,384**	$ 24,972
Advanced Approaches	**$ 24,143**	$ 24,722
Risk-weighted assets:		
Standardized Approach	**$ 159,096**	$ 167,608
Advanced Approaches:		
Credit Risk	**$ 90,243**	$ 98,310
Market Risk	**2,979**	3,069
Operational Risk	**68,450**	63,688
Total Advanced Approaches	**$ 161,672**	$ 165,067
Average assets for Tier 1 leverage ratio	**$ 396,643**	$ 430,102
Total leverage exposure for SLR	**$ 336,049**	$ 354,033

(a) Reduced by deferred tax liabilities associated with intangible assets and tax-deductible goodwill.

The table below presents the factors that impacted CET1 capital.

CET1 generation *(in millions)*		**2022**
CET1 – Beginning of period	**$**	**18,746**
Net income applicable to common shareholders of The Bank of New York Mellon Corporation		**2,362**
Goodwill and intangible assets, net of related deferred tax liabilities		**1,439**
Gross CET1 generated		**3,801**
Capital deployed:		
Common stock dividends *(a)*		**(1,165)**
Common stock repurchases		**(124)**
Total capital deployed		**(1,289)**
Other comprehensive loss:		
Unrealized loss on assets available-for-sale		**(2,907)**
Foreign currency translation		**(590)**
Unrealized loss on cash flow hedges		**(6)**
Defined benefit plans		**(250)**
Total other comprehensive loss		**(3,753)**
Additional paid-in capital *(b)*		**380**
Other additions (deductions):		
Net pension fund assets		**83**
Embedded goodwill		**21**
Deferred tax assets		**(1)**
Other		**44**
Total other additions		**147**
Net CET1 deployed		**(714)**
CET1 – End of period	**$**	**18,032**

(a) Includes dividend-equivalents on share-based awards.
(b) Primarily related to stock awards, the exercise of stock options and stock issued for employee benefit plans.

The following table shows the impact on the consolidated capital ratios at Dec. 31, 2022 of a $100 million increase or decrease in common equity, or a $1 billion increase or decrease in RWAs, quarterly average assets or total leverage exposure.

Sensitivity of consolidated capital ratios at Dec. 31, 2022	Increase or decrease of	
(in basis points)	$100 million in common equity	$1 billion in RWA, quarterly average assets or total leverage exposure
CET1:		
Standardized Approach	6 bps	7 bps
Advanced Approaches	6	7
Tier 1 capital:		
Standardized Approach	6	9
Advanced Approaches	6	9
Total capital:		
Standardized Approach	6	10
Advanced Approaches	6	9
Tier 1 leverage	3	1
SLR	3	2

Stress capital buffer

In August 2022, the Federal Reserve announced that BNY Mellon's SCB requirement would be 2.5%, equal to the regulatory floor, effective as of Oct. 1, 2022. The SCB replaced the static 2.5% capital conservation buffer for Standardized Approach capital ratios for Comprehensive Capital Analysis and Review ("CCAR") BHCs. The SCB does not apply to bank subsidiaries, which remain subject to the static 2.5% capital conservation buffer. See "Supervision and Regulation" for additional information.

The SCB final rule generally eliminates the requirement for prior approval of common stock repurchases in excess of the distributions in a firm's capital plan, provided that such distributions are consistent with applicable capital requirements and buffers, including the SCB.

Total Loss-Absorbing Capacity ("TLAC")

The following summarizes the minimum requirements for BNY Mellon's external TLAC and external long-term debt ("LTD") ratios, plus currently applicable buffers.

	As a % of RWAs *(a)*	**As a % of total leverage exposure**
Eligible external TLAC ratios	Regulatory minimum of 18% plus a buffer *(b)* equal to the sum of 2.5%, the method 1 G-SIB surcharge (currently 1%), and the countercyclical capital buffer, if any	Regulatory minimum of 7.5% plus a buffer *(c)* equal to 2%
Eligible external LTD ratios	Regulatory minimum of 6% plus the greater of the method 1 or method 2 G-SIB surcharge (currently 1.5%)	4.5%

(a) RWA is the greater of the Standardized Approach and Advanced Approaches.
(b) Buffer to be met using only CET1.
(c) Buffer to be met using only Tier 1 capital.

External TLAC consists of the Parent's Tier 1 capital and eligible unsecured LTD issued by it that has a remaining term to maturity of at least one year and satisfies certain other conditions. Eligible LTD consists of the unpaid principal balance of eligible unsecured debt securities, subject to haircuts for amounts due to be paid within two years, that satisfy certain other conditions. Debt issued prior to Dec.

31, 2016 has been permanently grandfathered to the extent these instruments otherwise would be ineligible only due to containing impermissible acceleration rights or being governed by foreign law.

The following table presents our external TLAC and external LTD ratios.

TLAC and LTD ratios	Dec. 31, 2022		
	Minimum required	Minimum ratios with buffers	Ratios
Eligible external TLAC:			
As a percentage of RWA	18.0 %	21.5 %	30.0 %
As a percentage of total leverage exposure	7.5 %	9.5 %	14.4 %
Eligible external LTD:			
As a percentage of RWA	7.5 %	N/A	14.4 %
As a percentage of total leverage exposure	4.5 %	N/A	6.9 %

N/A – Not applicable.

If BNY Mellon maintains risk-based ratio or leverage TLAC measures above the minimum required level, but with a risk-based ratio or leverage below the minimum level with buffers, we will face constraints on dividends, equity repurchases and discretionary executive compensation based on the amount of the shortfall and eligible retained income.

Issuer purchases of equity securities

Share repurchases – fourth quarter of 2022 *(dollars in millions, except per share amounts; common shares in thousands)*	Total shares repurchased	Average price per share	Total shares repurchased as part of a publicly announced plan or program	Maximum approximate dollar value of shares that may yet be purchased under the publicly announced plans or programs at Dec. 31, 2022	
October 2022	1	$ 38.52	1	$ 2,628	
November 2022	18	42.43	18	2,627	
December 2022	16	45.88	16	2,626	
Fourth quarter of 2022 *(a)*	**35**	**$ 43.81**	**35**	**$ 2,626**	*(b)*

(a) Includes 35 thousand shares repurchased at a purchase price of $2 million from employees, primarily in connection with the employees' payment of taxes upon the vesting of restricted stock. There were no open market repurchases in the fourth quarter of 2022.

(b) Represents the remaining dollar value of shares yet repurchased under the share repurchase program that expired on Dec. 31, 2022. Effective Jan. 1, 2023, the maximum value of the shares to be repurchased through a new share repurchase program approved in January 2023 is $5.0 billion.

In June 2021, in connection with the Federal Reserve's release of the 2021 CCAR stress tests, we announced a share repurchase program approved by our Board of Directors providing for the repurchase of up to $6.0 billion of common shares beginning in the third quarter of 2021 and continuing through the fourth quarter of 2022.

In January 2023, we announced a share repurchase program approved by our Board of Directors providing for the repurchase of up to $5.0 billion of common shares beginning Jan. 1, 2023. This new share repurchase plan replaced all previously authorized share repurchase plans.

Share repurchases may be executed through open market repurchases, in privately negotiated transactions or by other means, including through repurchase plans designed to comply with Rule 10b5-1 and other derivative, accelerated share repurchase and other structured transactions. The timing and exact amount of any common stock repurchases will depend on various factors, including market conditions and the common stock trading price; the Company's capital position, liquidity and financial performance; alternative uses of capital; and legal and regulatory limitations and considerations.

Trading activities and risk management

Our trading activities are focused on acting as a market-maker for our customers, facilitating customer trades and risk-mitigating hedging in compliance with the Volcker Rule. The risk from market-making activities for customers is managed by our traders and limited in total exposure through a system of position limits, value-at-risk ("VaR") methodology and other market sensitivity measures. VaR is the potential loss in value due to adverse market movements over a defined time horizon with a specified confidence level. The calculation of our VaR used by management and presented below assumes a one-day holding period, utilizes a 99% confidence level and incorporates non-linear product characteristics. VaR facilitates comparisons across portfolios of different risk characteristics. VaR also captures the diversification of aggregated risk at the firm-wide level.

VaR represents a key risk management measure and it is important to note the inherent limitations to VaR, which include:

- VaR does not estimate potential losses over longer time horizons where moves may be extreme;
- VaR does not take account of potential variability of market liquidity; and
- Previous moves in market risk factors may not produce accurate predictions of all future market moves.

See Note 23 of the Notes to Consolidated Financial Statements for additional information on the VaR methodology.

The following tables indicate the calculated VaR amounts for the trading portfolio for the designated periods using the historical simulation VaR model.

VaR *(a)* *(in millions)*	**2022**			**Dec. 31, 2022**
	Average	**Minimum**	**Maximum**	
Interest rate	**$ 4.1**	**$ 1.6**	**$ 9.3**	**$ 2.3**
Foreign exchange	**3.8**	**2.0**	**10.2**	**3.0**
Equity	**0.2**	**—**	**0.9**	**0.1**
Credit	**2.1**	**1.0**	**4.4**	**1.8**
Diversification	**(5.0)**	**N/M**	**N/M**	**(3.5)**
Overall portfolio	**5.2**	**2.5**	**11.4**	**3.7**

VaR *(a)* *(in millions)*	2021			Dec. 31, 2021
	Average	Minimum	Maximum	
Interest rate	$ 2.1	$ 1.5	$ 3.5	$ 1.7
Foreign exchange	2.6	1.9	4.1	2.7
Equity	0.1	—	0.9	0.1
Credit	1.7	1.1	2.8	1.7
Diversification	(3.2)	N/M	N/M	(2.7)
Overall portfolio	3.3	2.4	5.2	3.5

(a) VaR exposure does not include the impact of the Company's consolidated investment management funds and seed capital investments.

N/M – Because the minimum and maximum may occur on different days for different risk components, it is not meaningful to compute a minimum and maximum portfolio diversification effect.

The interest rate component of VaR represents instruments whose values are predominantly driven by interest rate levels. These instruments include, but are not limited to, U.S. Treasury securities, swaps, swaptions, forward rate agreements, exchange-traded futures and options, and other interest rate derivative products.

The foreign exchange component of VaR represents instruments whose values predominantly vary with the level or volatility of currency exchange rates or interest rates. These instruments include, but are not limited to, currency balances, spot and forward transactions, currency options and other currency derivative products.

The equity component of VaR consists of instruments that represent an ownership interest in the form of domestic and foreign common stock or other equity-linked instruments. These instruments include, but are not limited to, common stock, exchange-traded funds, preferred stock, listed equity options (puts and calls), OTC equity options, equity total return swaps, equity index futures and other equity derivative products.

The credit component of VaR represents instruments whose values are predominantly driven by credit spread levels, i.e., idiosyncratic default risk. These instruments include, but are not limited to, single issuer credit default swaps, and securities with exposures from corporate and municipal credit spreads.

The diversification component of VaR is the risk reduction benefit that occurs when combining portfolios and offsetting positions, and from the correlated behavior of risk factor movements.

During 2022, interest rate risk generated 40% of average gross VaR, foreign exchange risk generated 37% of average gross VaR, equity risk generated 2% of average gross VaR and credit risk generated 21% of average gross VaR. During 2022, our daily trading loss exceeded our calculated VaR amount of the overall portfolio on one occasion.

The following table of total daily trading revenue or loss illustrates the number of trading days in which our trading revenue or loss fell within particular ranges during the past five quarters.

Distribution of trading revenue (loss) *(a)*

	Quarter ended				
(dollars in millions)	**Dec. 31, 2022**	Sept. 30, 2022	June 30, 2022	March 31, 2022	Dec. 31, 2021
Revenue range:	Number of days				
Less than $(2.5)	**2**	—	1	1	—
$(2.5) – $0	**4**	3	4	8	3
$0 – $2.5	**13**	10	10	12	27
$2.5 – $5.0	**24**	32	24	23	21
More than $5.0	**20**	19	24	18	12

(a) Trading revenue (loss) includes realized and unrealized gains and losses primarily related to spot and forward foreign exchange transactions, derivatives and securities trades for our customers and excludes any associated commissions, underwriting fees and net interest revenue.

Trading assets include debt and equity instruments and derivative assets, primarily foreign exchange and interest rate contracts, not designated as hedging instruments. Trading assets were $9.9 billion at Dec. 31, 2022 and $16.6 billion at Dec. 31, 2021.

Trading liabilities include debt and equity instruments and derivative liabilities, primarily foreign exchange and interest rate contracts, not designated as hedging instruments. Trading liabilities were $5.4 billion at Dec. 31, 2022 and $5.5 billion at Dec. 31, 2021.

Under our fair value methodology for derivative contracts, an initial "risk-neutral" valuation is performed on each position assuming time-discounting based on a AA credit curve. In addition, we consider credit risk in arriving at the fair value of our derivatives.

We reflect external credit ratings as well as observable credit default swap spreads for both ourselves and our counterparties when measuring the fair value of our derivative positions. Accordingly, the valuation of our derivative positions is sensitive to the current changes in our own credit spreads, as well as those of our counterparties.

At Dec. 31, 2022, our OTC derivative assets, including those in hedging relationships, of $2.9 billion included a credit valuation adjustment ("CVA") deduction of $18 million. Our OTC derivative liabilities, including those in hedging relationships, of $3.0 billion included a debit valuation adjustment ("DVA") of $6 million related to our own credit spread. Net of hedges, the CVA increased by $4 million and the DVA increased by $7 million in 2022, which increased other trading revenue by $3 million in 2022. During 2022, no realized loss was charged off against CVA reserves.

At Dec. 31, 2021, our OTC derivative assets, including those in hedging relationships, of $2.8 billion included a CVA deduction of $29 million. Our OTC derivative liabilities, including those in hedging relationships, of $3.4 billion included a DVA of $2 million related to our own credit spread. Net of hedges, the CVA increased by $1 million and the DVA was unchanged in 2021, which decreased investment and other revenue - other trading revenue by $1 million in 2021. During 2021, no realized loss was charged off against CVA reserves.

The table below summarizes our exposure, net of collateral related to our derivative counterparties, as determined on an internal risk management basis. Significant changes in counterparty credit ratings could alter the level of credit risk faced by BNY Mellon.

Foreign exchange and other trading counterparty risk rating profile

	Dec. 31, 2022		Dec. 31, 2021	
(dollars in millions)	Exposure, net of collateral	Percentage of exposure, net of collateral	Exposure, net of collateral	Percentage of exposure, net of collateral
Investment grade	**$ 2,553**	**98 %**	$ 2,538	97 %
Non-investment grade	**63**	**2 %**	88	3 %
Total	**$ 2,616**	**100 %**	$ 2,626	100 %

Asset/liability management

Our diversified business activities include processing securities, accepting deposits, investing in securities, lending, raising money as needed to fund assets and other transactions. The market risks from these activities include interest rate risk and foreign exchange risk. Our primary market risk is exposure to movements in U.S. dollar interest rates and certain foreign currency interest rates. We actively manage interest rate sensitivity and use earnings simulation and discounted cash flow models to identify interest rate exposures.

An earnings simulation model is the primary tool used to assess changes in pre-tax net interest revenue between a baseline scenario and hypothetical interest rate scenarios. Interest rate sensitivity is quantified by calculating the change in pre-tax net interest revenue between the scenarios over a 12-month measurement period.

The baseline scenario incorporates the market's forward rate expectations and management's assumptions regarding client deposit rates, credit spreads, changes in the prepayment behavior of loans and securities and the impact of derivative financial instruments used for interest rate risk management purposes as of Dec. 31, 2022. These assumptions have been developed through a combination of historical analysis and future expected pricing behavior and are inherently uncertain. Actual results may differ materially from projected results due to timing, magnitude and frequency of interest rate changes, and changes in market conditions and management's strategies, among other factors. Client deposit levels and mix are key assumptions impacting net interest revenue in the baseline as well as the hypothetical interest rate scenarios. The earnings simulation model assumes static deposit levels and mix and it also assumes that no management actions will be taken to mitigate the effects of interest rate changes. Typically, the baseline scenario uses the average deposit balances of the quarter.

In the table below, we use the earnings simulation model to assess the impact of various hypothetical interest rate scenarios compared to the baseline scenario. In each of the scenarios, all currencies' interest rates are instantaneously shifted higher or lower at the start of the forecast. Long-term interest rates are defined as all tenors equal to or greater than three years and short-term interest rates are defined as all tenors equal to or less than three months. Interim term points are interpolated where applicable.

The following table shows net interest revenue sensitivity for BNY Mellon.

Estimated changes in net interest revenue *(in millions)*	**Dec. 31, 2022**	Sept. 30, 2022	Dec. 31, 2021
Up 100 bps rate shock vs. baseline	**$ 214**	$ 267	$ 688
Long-term up 100 bps, short-term unchanged	**30**	(17)	204
Short-term up 100 bps, long-term unchanged	**184**	283	483
Long-term down 50 bps, short-term unchanged	**(20)**	7	(98)
Down 100 bp rate shock vs. baseline	**(281)**	(394)	392

The declines in most of the rising rate sensitivities compared with Sept. 30, 2022 are due to higher deposit interest expense in rising rate scenarios, which is driven by the expectation of paying higher rates on deposits as central banks continue their tightening cycle.

While the net interest revenue sensitivity scenario calculations assume static deposit balances to facilitate consistent period-over-period comparisons, net interest revenue is impacted by changes in deposit balances. Noninterest-bearing deposits are particularly sensitive to changes in short-term rates.

To illustrate the net interest revenue sensitivity to deposit run-off, we note that a $5 billion instantaneous reduction of U.S. dollar-denominated noninterest-bearing deposits would reduce the net interest revenue sensitivity results in the up 100 basis point scenario in the table above by approximately $290 million. The impact would be smaller if the run-off was assumed to be a mixture of interest-bearing and noninterest-bearing deposits.

For a discussion of factors impacting the growth or contraction of deposits, see "Risk Factors – Capital and Liquidity Risk – Our business, financial condition and results of operations could be adversely affected if we do not effectively manage our liquidity."

We also project future cash flows from our assets and liabilities over a long-term horizon and then discount these cash flows using instantaneous parallel shocks to prevailing interest rates. This measure reflects the

structural balance sheet interest rate sensitivity by discounting all future cash flows. The aggregation of these discounted cash flows is the economic value of equity ("EVE"). The following table shows how EVE would change in response to changes in interest rates.

Estimated changes in EVE	
	Dec. 31, 2022
Rate change:	
Up 200 bps vs. baseline	**(1.8)%**
Up 100 bps vs. baseline	**2.2 %**

The asymmetrical accounting treatment of the impact of a change in interest rates on our balance sheet may create a situation in which an increase in interest rates can adversely affect reported equity and regulatory capital, even though economically there may be no impact on our economic capital position. For example, an increase in rates will result in a decline in the value of our available-for-sale securities portfolio. In this example, there is no corresponding change on our fixed liabilities, even though economically these liabilities are more valuable as rates rise.

These results do not reflect strategies that management could employ to limit the impact as interest rate expectations change.

To manage foreign exchange risk, we fund foreign currency-denominated assets with liability instruments denominated in the same currency. We utilize various foreign exchange contracts if a liability denominated in the same currency is not available or desired, and to minimize the earnings impact of translation gains or losses created by investments in foreign markets. We use forward foreign exchange contracts to protect the value of our net investment in foreign operations. At Dec. 31, 2022, net investments in foreign operations totaled $13 billion and were spread across 18 foreign currencies.

Overview

BNY Mellon plays a vital role in the global financial markets, and effective risk management is critical to our success. BNY Mellon operates under the Enterprise Risk Management Framework ("risk management framework") which is the foundation of our risk management approach. Risk management begins with a strong risk culture, and we reinforce our culture through policies and the Code of Conduct, which are grounded in our core values of passion for excellence, integrity, strength in diversity and courage to lead.

These values are critical to our success. They not only explain what we stand for and our shared culture, but also help us to think and act globally. They serve as a representation of the promises we have made to our clients, communities, shareholders and each other.

BNY Mellon's Risk Identification process is a core component of BNY Mellon's risk framework and is the foundation for understanding and managing risk across our six primary risk categories: Operational Risk, Market Risk, Credit Risk, Liquidity Risk, Model Risk and Strategic Risk. Quarterly, the Company engages in a process designed to document identification and assessment of its risks, and to determine the set of risks material to BNY Mellon. Outputs from the Risk Identification process inform elements of our risk framework such as our Risk Appetite as well as Enterprise-wide Stress Testing and Capital Planning.

BNY Mellon's Risk Appetite expresses the level of risk we are willing to assume to meet our objectives in a manner that balances risk and reward while considering our risk capacity and maintaining a balance sheet that remains resilient throughout market cycles. This guides BNY Mellon's risk-taking activities and informs key decision-making processes, including the manner by which we pursue our business strategy and the methods by which we manage risk. The Risk Appetite Statement and associated key risk metrics to monitor our risk profile are updated and approved by the Risk Committee of the Board at least annually.

BNY Mellon conducts Enterprise-wide Stress Testing as part of its Internal Capital Adequacy Assessment Process in accordance with CCAR, and as required by the enhanced prudential standards issued pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act"). Enterprise-wide Stress Testing considers the Company's lines of business, products, geographic areas and risk types incorporating the results from underlying models and projections for a range of stress scenarios. Additional details on Capital Planning and Stress Testing are included in "Supervision and Regulation."

Three Lines of Defense

BNY Mellon's Three Lines of Defense model is a critical component of our risk management framework to clarify roles and responsibilities across the organization.

BNY Mellon's first line of defense includes senior management and business and corporate staff, excluding management and employees in Risk Management, Compliance and Internal Audit. Senior management in the first line is responsible for maintaining and implementing an effective risk management framework and ensuring BNY Mellon appropriately manages risk consistent with its strategy and risk tolerance, including establishing clear responsibilities and accountability for the identification, measurement, management and control of risk.

Risk & Compliance is the independent second line of defense. It is responsible for establishing a framework that outlines expectations and provides guidance for the effective management of risk at BNY Mellon while also independently testing, reviewing and challenging the first line. Risk & Compliance provides independent oversight across three views – lines of business; regions and legal entities; and enterprise-wide risk and compliance disciplines which apply consistent standards for each risk or compliance type or topic across the firm.

The Chief Risk Officer has reporting lines to both the Chief Executive Officer and the Risk Committee of the Company's Board of Directors.

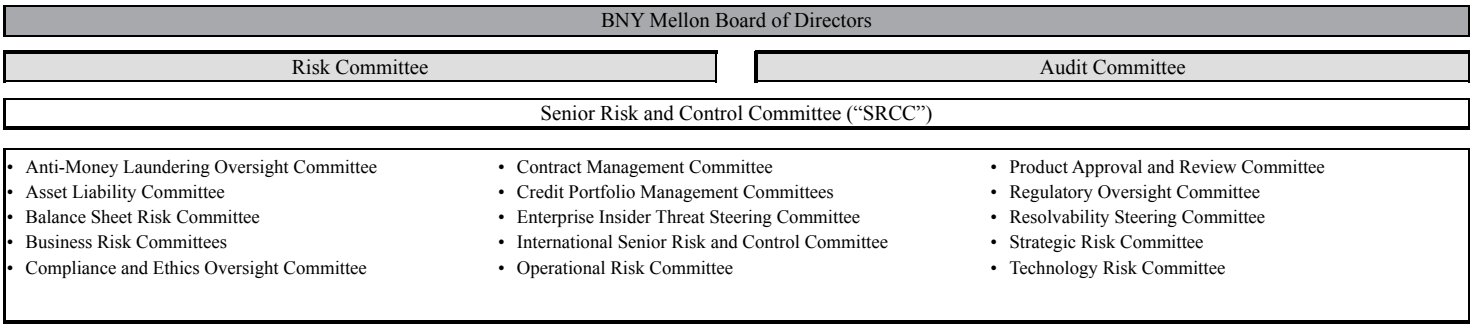
Internal Audit is BNY Mellon's third line of defense and serves as an independent, objective assurance function that reports directly to the Audit Committee of the Company's Board of Directors. It assists the Company in accomplishing its objectives by bringing a systematic, disciplined, risk-based approach to evaluate and improve the effectiveness of the Company's risk management, control and governance

processes. The scope of Internal Audit's work includes the review and evaluation of the adequacy, effectiveness and sustainability of risk management procedures, internal control systems, information systems and governance processes.

Governance

BNY Mellon's management is responsible for execution of the Company's risk management framework and the governance structure that supports it, with oversight provided by BNY Mellon's Board of Directors through two key Board committees: the Risk Committee and the Audit Committee.

A summary of the governance structure is provided below.



The Risk Committee is comprised entirely of independent directors and meets on a regular basis to review and assess the control processes with respect to the Company's inherent risks. It also reviews and assesses the risk management activities of the Company and the Company's risk policies and activities. The roles and responsibilities of the Risk Committee are described in more detail in its charter, a copy of which is available on our website, www.bnymellon.com.

The Audit Committee is also comprised entirely of independent directors. The Audit Committee meets on a regular basis to perform an oversight review of the integrity of the financial statements and financial reporting process, compliance with legal and regulatory requirements, our independent registered public accountant's qualifications and independence, and the performance of our independent registered public accountant and internal audit function. The Audit Committee also reviews management's assessment of the adequacy of internal controls. The functions of the Audit Committee are described in more detail in its charter, a copy of which is available on our website, www.bnymellon.com.

The SRCC is the most senior risk governance group at the Company and is responsible for oversight of all Risk Management, Compliance & Ethics activities and processes, including the Enterprise Risk Management Framework. The committee is chaired by the Chief Risk Officer and its members include the Chief Executive Officer, Chief Financial Officer and General Counsel.

The SRCC has 15 sub-committees:

- Anti-Money Laundering Oversight Committee: Responsible for coordinating the Company's compliance with Anti-Money Laundering laws and regulations and enforcing the Company's Anti-Money Laundering Program.
- Asset Liability Committee ("ALCO"): The senior management committee responsible for balance sheet oversight, including capital, liquidity and interest rate risk management.
- Balance Sheet Risk Committee (the "BSRC"): Reviews and receives escalation relating to balance sheet risk management frameworks associated with the assets, liabilities and capital

of the Company. The BSRC reviews the adequacy of associated controls and processes, monitors risk management in the context of risk appetite, and approves related policy documents.

- Business Risk Committees: Review and assess risk and control issues observed from existing business practices or activities or arising from new business practices or activities in our various lines of business and supporting operations.
- Compliance and Ethics Oversight Committee: Provides governance and oversight of the operations of the Compliance and Ethics function and the management and reporting of compliance risk-related issues, as well as Compliance & Ethics processes, policies, procedures and standards.
- Contract Management Committee: The governance and escalation body for the Company's Customer Contract Management policy across the businesses, overseeing related policies, infrastructure, risk considerations and operations.
- Credit Portfolio Management Committees: Seven Portfolio Management Committees, governed by the same charter and rules, manage, monitor and review one of Credit Risk's primary portfolio segments, including underwriting criteria, portfolio limits and composition, concentration, credit strategy, quality and exposure.
- Enterprise Insider Threat Steering Committee: Provides enterprise-wide governance and oversight related to the Enterprise Insider Threat Program and related initiatives, as well as provides visibility to senior leadership related to the enterprise risk profile as it relates to insider threat risks.
- International Senior Risk and Control Committee: Provides risk management oversight, and acts as a point of convergence for the coordination, transparency and communication of material issues (live or emerging) across international entities.
- Operational Risk Committee: Oversees the operational risk framework and policies, reviews and monitors program outputs and metrics, and monitors resolution of significant operational risk matters, including changes to the risk and control environment.
- Product Approval and Review Committee: Responsible for reviewing and approving proposals to introduce new and modify or retire existing products.
- Regulatory Oversight Committee: Provides strategic direction, oversight, challenge, and coordination across regulatory remediation initiatives within the Company's Regulatory Oversight Program.
- Resolvability Steering Committee: Oversees recovery and resolution planning, including but not limited to the project governance and oversight framework for all recovery and resolution planning requirements in relevant jurisdictions where BNY Mellon operates.
- Strategic Risk Committee: Considers for approval proposals for major strategic initiatives significantly impacting the risk profile of the Company, including but not limited to acquisitions, material changes to existing products, material new products, significant business process changes and complex transactions.
- Technology Risk Committee: Oversees the review and assessment of technology risk and control issues observed from existing business practices or activities, or arising from new business practices or activities in our various lines of business and supporting operations so as to assist business management and corporate staff in managing and monitoring technology risk and control issues.

Risk Types Overview

The understanding, identification, measurement and mitigation of risk are essential elements for the successful management of BNY Mellon. Our primary risk categories are:

Type of risk	Description
Operational	The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. Operational risk includes compliance and technology risks.
Market	The potential loss in value for the BNY Mellon financial portfolio caused by adverse movements in market prices of FX, fixed income and equity assets, credit spreads, commodities and liabilities accounted for under fair value and equivalent methods.
Credit	The risk of loss if any of our borrowers or other counterparties were to default on their obligations to us. Credit risk is present in the majority of our assets, but primarily concentrated in the loan and securities books, as well as foreign exchange and off-balance sheet exposures such as lending commitments, letters of credit and securities lending indemnifications.
Liquidity	The risk that BNY Mellon cannot meet its cash and collateral obligations at a reasonable cost for both expected and unexpected cash flows, without adversely affecting daily operations or financial conditions. Liquidity risk can arise from cash flow mismatches, market constraints from the inability to convert assets to cash, the inability to raise cash in the markets, deposit run-off or contingent liquidity events.
Model	The potential loss arising from incorrectly designing/applying a model approach or inaccuracies caused by market, credit or liquidity stress.
Strategic	The risk arising from adverse business decisions, poor implementation of business decisions or lack of responsiveness to changes in the financial industry and operating environment. Strategic and/or business risks may also arise from the acceptance of new businesses, the introduction or modification of products, strategic finance and risk management decisions, business process changes, complex transactions, acquisitions/divestitures/joint ventures and major capital expenditures/investments.

Operational Risk

In providing a comprehensive array of products and services, we are exposed to operational risk. Operational risk may result from, but is not limited to, errors related to transaction processing, breaches of internal control systems and compliance requirements, fraud by employees or persons outside BNY Mellon or business interruption due to system failures or other events. Operational risk may also include breaches of our technology and information systems resulting from unauthorized access to confidential information or from internal or external threats, such as cyberattacks. Operational risk also includes potential legal or regulatory actions that could arise. In the case of an operational event, we could suffer financial losses as well as reputational damage.

To address these risks, we maintain comprehensive policies and procedures and an internal control framework designed to provide a sound operational environment. These controls have been designed to manage operational risk at appropriate levels given our financial strength, the business environment and markets in which we operate, and the nature of our businesses, and considering factors such as competition and regulation.

The organizational framework for operational risk is based upon a strong risk culture that incorporates both governance and risk management activities comprising:

- Accountability of Businesses – Business managers are responsible for maintaining an effective system of internal controls commensurate with their risk profiles and in accordance with BNY Mellon policies and procedures.
- Operational Risk Management is the independent second line function responsible for developing risk management policies and tools for assessing, measuring, monitoring and managing operational risk for BNY Mellon. The primary objectives of the Operational Risk Management Framework are to promote effective risk management, identify emerging risks and drive continuous improvement in controls and to reduce operational risk. The Operational Risk Management function includes independent operational risk oversight of all lines of business and functions.

- Technology risk is a subset of operational risk. Technology Risk Management is the independent operational risk management function that is responsible for independent risk oversight of the technology footprint. The function brings together the second line independent risk oversight of technology, resiliency and data in a cohesive and holistic manner. These areas are closely related, allowing expertise to be brought to bear across some of BNY Mellon's most significant risk exposures. The function also conducts integrated independent assessments on multiple cyber and digital initiatives within the Company. They partner with businesses and legal entities to drive better understanding and a more accurate assessment of operational risks that can occur from technology operations. Technology Risk Management also acts as a catalyst to drive the development of global technology policies, key controls and methods to assess, measure and monitor information and technology risk for BNY Mellon.
- Operational resiliency is a top priority for the Company. Foundational to our enterprise resiliency strategy is the Business Services Framework, governed by the Enterprise Resiliency Office, with second line oversight from Resiliency Risk Management. Business management is accountable for maintaining effective resiliency capabilities under this framework, while Technology and Operations are responsible for successful execution in coordination with the business. Elements of the resiliency strategy include the Business Services Framework, IT Asset Management, Application transformation and Mainframe modernization, as well as Disaster Recovery Testing and Business Continuity capabilities. We are also focused on the resiliency capabilities of our most important service providers. These capabilities are intended to enable the Company to deliver services to our clients by the ability to prevent, respond and recover from business disruptions and threats.
- Compliance and financial crimes risk is also a subset of operational risk. It is defined as the risk of legal or regulatory sanctions, material financial loss, or a financial institution's reputational loss as a result of its failure to comply with laws, regulations, rules, related self-regulatory organization standards, and codes of conduct or organizational standards of practice. We seek to comply with all obligations through a comprehensive, integrated Compliance and Ethics Management Framework that is driven by Holistic Risk Management Principles.

Market Risk

Our business activity tends to minimize outright our direct exposure to market risk, with such risk primarily limited to market volatility from trading activity in support of clients. More significant direct market risk is assumed in the form of interest rate and credit spread risk within the investment portfolio both as a means for forward asset/liability management and net interest revenue generation, and also through the interest rate risk associated with BNY Mellon's balance sheet position which is sensitive to adverse movements in interest rates.

The Company has indirect market risk exposure associated with the change in the value of financial collateral underlying securities financing and derivatives positions. The Collateral Margin Review Committee reviews and approves the standards for collateral received or paid in respect of collateralized derivative agreements and securities financing transactions.

Oversight of market risk is performed by the SRCC and the BSRC and through executive review meetings. Stress tests results for the trading portfolio are reviewed during the Markets Weekly Risk meeting, which is attended by senior managers from Risk Management, Finance and Sales and Trading. Oversight of the risk management framework associated with the Corporate Treasury and Portfolio Management functions is performed by the BSRC. Detailed aspects of this oversight are conducted by the Treasury Risk Committee, a subcommittee of the BSRC.

The Business Risk Committee for the Markets business reviews key risk and control issues and related initiatives facing all Markets lines of business. Also addressed during the Business Risk Committee meetings are trading VaR and trading stressed VaR exposures against limits.

Finally, the Risk Quantification Review Group reviews back-testing results for the Company's VaR model.

Credit Risk

We extend direct credit in order to foster client relationships and as a method by which to generate interest income from the deposits that result from business activity. We extend and incur intraday credit exposure in order to facilitate our various processing activities.

To balance the value of our activities with the credit risk incurred in pursuing them, we set and monitor internal credit limits for activities that entail credit risk, most often on the size of the exposure and the quality of the counterparty. For credit exposures driven by changing market rates and prices, exposure measures include an add-on for such potential changes.

We manage credit risk exposure at a counterparty, industry, country and portfolio level. Credit risk exposure at the counterparty level is managed through our credit approval framework and involves four approval levels up to and including the Chief Risk Officer of the Company. The requisite approvals are based upon the size and relative risk of the aggregate exposure under consideration. The Credit Risk Group is responsible for approving the size, terms and maturity of all credit exposures, as well as the ongoing monitoring of the creditworthiness of the counterparty. In addition, it is responsible for challenging and approving the internal risk ratings on each exposure.

The calculation of a fundamental credit measure is based on a projection of a statistically probable credit loss, used to help determine the appropriate loan loss reserve and to measure customer profitability. Credit loss considers three basic components: the estimated size of the exposure whenever default might occur, the probability of default before maturity and the severity of the loss we would incur, commonly called “loss given default.” For institutional lending, where most of our credit risk is created, unfunded commitments are assigned a usage given default percentage. Borrowers/counterparties are assigned ratings by the business and challenged, reviewed and approved by the Credit Portfolio Managers on an 18-grade scale, which translate to a scaled probability of default. Additionally, transactions are assigned loss given default ratings (on a 5-grade scale) that reflect the transactions’ structures, including the effects of guarantees, collateral and relative seniority of position.

The Risk and Compliance Modeling and Analytics Group is responsible for the calculation methodologies and the estimates of the inputs used in those methodologies for the determination of expected loss. These methodologies and input estimates are regularly evaluated for appropriateness and accuracy. As new techniques and data become available, the Risk and Compliance Modeling and Analytics Group incorporates, where appropriate, those techniques or data.

BNY Mellon seeks to limit both on- and off-balance sheet credit risk through prudent underwriting and the use of capital only where risk-adjusted returns warrant. We seek to manage risk and improve our portfolio diversification through syndications, asset sales, credit enhancements and active collateralization and netting agreements. In addition, we have a separate Credit Risk Review Group, which is an independent group within Internal Audit, made up of experienced loan review officers who perform timely reviews of the loan files and credit ratings assigned to the loans.

Liquidity Risk

Adequate liquidity is vital to BNY Mellon’s ability to process payments as well as settle and clear transactions on behalf of clients. The Company’s liquidity position can be affected by multiple factors, including funding mismatches, market conditions that impact our ability to convert our investment portfolio to cash, inability to issue debt or roll over funding, run-off of core deposits, and contingent liquidity events such as additional collateral posting requirements. Additionally, a downgrade in our credit rating can not only lead to an outflow of deposits, which are a major source of our funding, but also increase our margin requirements on secured transactions and have a broader adverse impact on our overall brand that may further impair our ability to refinance maturing liabilities. Changes in economic conditions or exposure to other risks can also affect our liquidity.

The Board of Directors approves liquidity risk tolerance and is responsible for oversight of liquidity risk management of the Company. ALCO provides governance for the appropriate execution of Board-approved strategies, policies and procedures for managing liquidity. Senior management is responsible for executing those Board-approved strategies, policies and procedures for managing

liquidity which ALCO oversees, as well as regularly reporting the liquidity position of the Company to the Board of Directors. The BSRC provides governance over independent risk oversight of liquidity risks associated with assets and liabilities, and oversees the establishment of control frameworks. The Treasury Risk Committee, which is chaired by independent risk management, validates and approves internal stress testing methodologies and assumptions, and an independent Liquidity Risk function is responsible for providing ongoing review and oversight of liquidity risk management.

BNY Mellon actively manages and monitors its cash position, quality of the investment portfolio, intraday liquidity positions and potential liquidity needs in order to support the timely payment and settlement of obligations under both normal and stressed conditions. The Company adheres to a range of stress testing measures to maintain sufficient liquidity relative to risk appetite, including the Liquidity Coverage Ratio and Internal Liquidity Stress Testing.

Model Risk

Models create the infrastructure for managing risk. Among their multiple functions, models help us value securities, rate the credit quality of obligors, establish capital needs and monitor liquidity trends. Model risk incidents could result from faulty design, misuse, or environmental conditions that invalidate our assumptions or otherwise make a model unfit for purpose. When this happens, the Company could be exposed to losses and other adverse consequences resulting from operational, market, credit and liquidity risk, as well as reputational harm. We aim to maintain a low-risk environment.

BNY Mellon's processes are designed to identify the conditions under which model risk incidents will occur and to establish controls that are designed to minimize or prevent loss in the event of a model risk incident. These processes include enforcement of standards for developing models, a process to validate new models and review the changes to existing models, as well as monitoring of performance throughout a model's life.

Model Risk Management, an independent risk management function, is responsible for executing Board-approved strategies, policies, and procedures for managing models. Senior management is responsible for regularly reporting on the Company's modeling infrastructure to the Risk Committee of the Board of Directors. The Board of Directors approves risk tolerances and is responsible for oversight.

When monitoring model risk, we evaluate multiple dimensions including the quality of design, the robustness of controls, and indications of underperformance. Based on these measures, we create an overall metric that is intended to measure the health of the Company's modeling environment and set thresholds around it. This allows us to manage model risk, not only at the level of the individual model, but also in aggregate, across all the Company's businesses.

Strategic Risk

Our strategy includes, but is not limited to, improving organic growth across our businesses, driving quality solutions and operating efficiencies, and expanding technology-enabled solutions. Successful realization of our strategy requires that we provide expertise and insight through market-leading solutions that drive economies of scale and attract, develop and retain highly talented people capable of executing our strategy, while protecting our sound and stable financial profile. We must understand and meet market and client expectations with suitable products and offerings that are financially viable and scalable and that integrate into our business model. Failure to do so could impact both our growth strategy and our ability to service our existing clients, resulting in potential financial loss or litigation.

Changes in the markets in which we and our clients operate can evolve quickly. The introduction of new or disruptive technologies, geopolitical events and slowing economies are examples of events that can produce market uncertainty. Failure to either anticipate or participate in transformational change within a given market or appropriately and promptly react to market conditions or client preferences could result in poor strategic positioning and potential negative financial impact. While it is essential that we continue to innovate and respond to changing markets and client demand, we must do so in a manner that does not affect our financial position or jeopardize our fundamental business strategy.

Evolving Regulatory Environment

BNY Mellon engages in banking, investment advisory and other financial activities in the U.S. and 34 other countries and is subject to extensive regulation in the jurisdictions in which it operates. Global supervisory authorities generally are charged with ensuring the safety and soundness of financial institutions, protecting the interests of customers, including depositors in banking entities and investors in mutual funds and other pooled vehicles, safeguarding the integrity of securities and other financial markets and promoting systemic resiliency and financial stability in the relevant country. They are not, however, generally charged with protecting the interests of our shareholders or non-depositor creditors. This discussion outlines the material elements of selected laws and regulations applicable to us. The impact of certain other laws and regulations, such as tax law, is discussed elsewhere in this Annual Report. Changes in these standards, or in their application, cannot be predicted, but may have a material effect on our businesses and results of operations.

The financial services industry has been the subject of enhanced regulatory oversight in the past decade globally, and this enhanced oversight environment is likely to continue in the future. Our businesses have been subject to a significant number of global reform measures.

Political developments have resulted and may continue to result in legislative and regulatory changes to key aspects of the Dodd-Frank Act and its implementing regulations and in laws or regulations relating to environmental, social and governance ("ESG") matters.

Enhanced Prudential Standards

The Federal Reserve has adopted rules ("SIFI Rules") to implement liquidity requirements, capital stress testing and overall risk management requirements affecting U.S. systemically important financial institutions ("SIFIs"). BNY Mellon must comply with enhanced liquidity and overall risk management standards, which include maintenance of a buffer of highly liquid assets based on projected funding needs for 30 days. The liquidity buffer is in addition to the rules regarding the LCR and net stable funding ratio ("NSFR"), discussed below, and is described by the Federal Reserve as being "complementary" to these liquidity standards.

Single Counterparty Credit Limits

The Federal Reserve has adopted a final rule imposing single-counterparty credit limits ("SCCLs") on, among other organizations, domestic BHCs, including BNY Mellon, that are G-SIBs. The SCCLs apply to the credit exposure of a covered firm and all of its subsidiaries to a single counterparty and all of its affiliates and connected entities.

The final rule established two primary credit exposure limits: (i) a covered domestic BHC may not have aggregate net credit exposure to any unaffiliated counterparty in excess of 25% of its Tier 1 capital; and (ii) a U.S. G-SIB is further prohibited from having aggregate net credit exposure in excess of 15% of its Tier 1 capital to any "major counterparty" (defined as a G-SIB or a nonbank SIFI).

BNY Mellon has been in compliance with the two primary exposure limits since the effective date based on the daily monitoring process we have established. The final rule provides a cure period of 90 days (or, with prior notice from the Federal Reserve, a longer or shorter period) for breaches of the SCCL rule. During the cure period, a company may not engage in additional credit transactions with the particular counterparty unless the company has obtained a temporary credit exposure limit increase from the Federal Reserve.

Capital Planning and Stress Testing

Payment of Dividends, Stock Repurchases and Other Capital Distributions

The Parent is a legal entity separate and distinct from its banks and other subsidiaries. Therefore, the Parent primarily relies on dividends, interest, distributions and other payments from its subsidiaries, including extensions of credit from the IHC, to meet its obligations, including its obligations with respect to its securities, and to provide funds for share repurchases and payment of common and preferred dividends to its stockholders, to the extent declared by the Board of Directors. Various federal and state laws and regulations limit the amount of dividends that may be paid to the Parent by our U.S. bank subsidiaries without regulatory consent. If, in the opinion of the applicable federal regulatory agency, a depository institution under its jurisdiction is engaged in or is about to engage in an unsafe or unsound practice (which, depending on the financial condition

of the bank, could include the payment of dividends), the regulator may require, after notice and hearing, that the bank cease and desist from such practice. The Federal Reserve, the FDIC and the Office of the Comptroller of the Currency ("OCC") (together the "Agencies") have indicated that the payment of dividends would constitute an unsafe and unsound practice if the payment would reduce a depository institution's capital to an inadequate level. Moreover, under the Federal Deposit Insurance Act, as amended (the "FDI Act"), an insured depository institution ("IDI") may not pay any dividends if the institution is undercapitalized or if the payment of the dividend would cause the institution to become undercapitalized. In addition, the Agencies have issued policy statements which provide that FDIC-insured depository institutions and their holding companies should generally pay dividends only out of their current operating earnings.

In general, the amount of dividends that may be paid by our U.S. banking subsidiaries, including to the Parent, is limited to the lesser of the amounts calculated under a "recent earnings" test and an "undivided profits" test. Under the recent earnings test, a dividend may not be paid if the total of all dividends declared and paid by the entity in any calendar year exceeds the current year's net income combined with the retained net income of the two preceding years, unless the entity obtains prior regulatory approval. Under the undivided profits test, a dividend may not be paid in excess of the entity's "undivided profits" (generally, accumulated net profits that have not been paid out as dividends or transferred to surplus). The ability of our bank subsidiaries to pay dividends to the Parent may also be affected by the capital adequacy standards applicable to those subsidiaries, which include minimum requirements and buffers.

There are also limitations specific to the IHC's ability to make distributions or extend credit to the Parent. The IHC is not permitted to pay dividends to the Parent if certain key capital or liquidity indicators are breached. Additionally, if our projected financial resources deteriorate so severely that resolution of the Parent becomes imminent, the committed lines of credit provided by the IHC to the Parent will automatically terminate, with all outstanding amounts becoming due.

BNY Mellon's capital distributions are subject to Federal Reserve oversight. The major component of that oversight is the Federal Reserve's CCAR, implementing its capital plan rule. That rule requires BNY Mellon to submit annually a capital plan to the Federal Reserve. We are also required to collect and report certain related data on a quarterly basis to allow the Federal Reserve to monitor progress against the annual capital plan.

On March 4, 2020, the Federal Reserve finalized an SCB rule, which made changes to the capital plan rule. The SCB rule eliminated the quantitative grounds for objection to a firm's CCAR capital plan and introduced an SCB that became part of quarterly capital requirements of CCAR firms on Oct. 1, 2020. The final rule replaced the 2.5% capital conservation buffer with an SCB requirement for capital ratios under the U.S. capital rules' standardized approach risk-weightings framework ("Standardized Approach") that is based on the largest projected decrease in a firm's CET1 ratio in the nine-quarter CCAR supervisory severely adverse scenario plus four quarters of planned common stock dividends as percentage of RWAs. The SCB is subject to a 2.5% floor. Each CCAR firm, including BNY Mellon, will be notified of its SCB by June 30, and the SCB will become effective on October 1 of the applicable calendar year. In August 2022, the Federal Reserve announced BNY Mellon's SCB requirement of 2.5%, which equals the regulatory floor. The SCB rule requires that firms reduce their planned capital actions if those distributions would cause the firm to fall below applicable buffer requirements based on the firm's own baseline scenario projections and allows firms to increase certain planned capital distributions if they are forecasted to be above capital buffer constraints. The SCB rule also eliminates the requirement for prior approval of capital distributions in excess of the distributions in a firm's capital plan, provided that such distributions do not cause a breach of the firm's capital ratios, including applicable buffers. In addition, the SCB rule provides that a firm must receive prior approval for any dividend, stock repurchase or other capital distribution, other than a capital distribution on a newly issued capital instrument, if a firm is required to resubmit its capital plan. See "Capital" for information about our share repurchase program.

The Agencies revised the definition of "eligible retained income" in 2020 to limit the potential for sudden and severe limitations on capital distributions if a banking organization's capital ratios fall below the applicable buffer requirements. To the extent a

banking organization's capital buffer is less than 100% of its applicable buffer requirements, its distributions and discretionary bonus payments are constrained by the amount of the shortfall and its eligible retained income. Under the final rule, eligible retained income is defined as the greater of (i) a banking organization's net income for the four preceding calendar quarters, net of any distributions and associated tax effects not already reflected in net income, and (ii) the average of a banking organization's net income over the preceding four quarters. The Federal Reserve made corresponding changes to the definition of "eligible retained income" in the TLAC buffer requirements. For more information on TLAC, see "Total Loss-Absorbing Capacity" below.

Regulatory Stress-Testing Requirements

In addition to the CCAR stress testing requirements, Federal Reserve regulations also include complementary Dodd-Frank Act Stress Tests ("DFAST"). The CCAR and DFAST requirements substantially overlap, and the Federal Reserve implements them at the BHC level on a coordinated basis. Under these DFAST regulations, we are required to undergo an annual regulatory stress test conducted by the Federal Reserve. The BHC is required to conduct an annual company-run stress test. In addition, The Bank of New York Mellon is required to conduct an annual company-run stress test (although the bank is permitted to combine certain reporting and disclosure of its stress test results with the results of BNY Mellon). Results from our annual company-run stress tests are reported to the appropriate regulators and published.

Capital Requirements – Generally

As a BHC, we are subject to U.S. capital rules, administered by the Federal Reserve. Our bank subsidiaries are subject to similar capital requirements administered by the Federal Reserve in the case of The Bank of New York Mellon and by the OCC in the case of our national bank subsidiaries, BNY Mellon, N.A. and The Bank of New York Mellon Trust Company, National Association. These requirements are intended to ensure that banking organizations have adequate capital given the risk levels of their assets and off-balance sheet exposures.

Notwithstanding the detailed U.S. capital rules, the Agencies retain significant discretion to set higher capital requirements for categories of BHCs or banks or for an individual BHC or bank as warranted.

U.S. Capital Rules – Minimum Risk-Based Capital Ratios and Capital Buffers

The U.S. capital rules require banking organizations subject to the advanced approaches risk-weighting framework (the "Advanced Approaches"), such as BNY Mellon, to satisfy minimum risk-based capital ratios using both the Standardized Approach and the Advanced Approaches. See "Capital" for details on these requirements. In addition, for CCAR firms, these minimum ratios are supplemented by (i) the SCB (which, for BNY Mellon, is 2.5%, as noted), in the case of a firm's Standardized Approach capital ratios, and (ii) a capital conservation buffer of 2.5%, in the case of a firm's Advanced Approaches capital ratios. The capital conservation buffer can only be satisfied with CET1 capital.

When systemic vulnerabilities are meaningfully above normal, the SCB and capital conservation buffer may be expanded up to an additional 2.5% through the imposition of a countercyclical capital buffer. For internationally active banks such as BNY Mellon, the countercyclical capital buffer required threshold is a weighted average of the countercyclical capital buffers deployed in each of the jurisdictions in which the bank has private sector credit exposures. The Federal Reserve, in consultation with the OCC and FDIC, has affirmed the current countercyclical capital buffer level for U.S. exposures of 0% and noted that any future modifications to the buffer would generally be subject to a 12-month phase-in period. Any countercyclical capital buffer required threshold arising from exposures outside the U.S. will also generally be subject to a 12-month phase-in period.

For G-SIBs, like BNY Mellon, the U.S. capital rules' buffers are also supplemented by a G-SIB risk-based capital surcharge, which is the higher of the surcharges calculated under two methods (referred to as "method 1" and "method 2"). Method 1 is based on the Basel Committee on Banking Supervision ("BCBS") framework and considers a G-SIB's size, interconnectedness, cross-jurisdictional activity, substitutability and complexity. Method 2 uses similar inputs, but is calibrated to result in significantly higher surcharges and replaces substitutability with a measure of reliance on short-

term wholesale funding. The G-SIB surcharge applicable to BNY Mellon for 2022 was 1.5%.

U.S. Capital Rules – Deductions from and Adjustments to Capital Elements

The U.S. capital rules provide for a number of deductions from and adjustments to CET1 capital. These include, for example, providing that unrealized gains and losses on all available-for-sale debt securities may not be filtered out for regulatory capital purposes, and the requirement that deferred tax assets dependent upon future taxable income and significant investments in non-consolidated financial entities be deducted from CET1 to the extent that any one such category exceeds 10% of CET1 or all such categories in the aggregate exceed 15% of CET1.

In addition, the Agencies have adopted a final rule that generally requires certain Advanced Approaches banking organizations, including BNY Mellon, to deduct from Tier 2 capital, subject to certain exceptions, direct, indirect and synthetic exposures to covered debt instruments, including TLAC instruments.

U.S. Capital Rules – Advanced Approaches Risk-Based Capital Rules

Under the U.S. capital rules' Advanced Approaches framework, credit risk-weightings are generally based on risk-sensitive approaches that largely rely on the use of internal credit models and parameters, whereas under the Standardized Approach credit risk-weightings are generally based on supervisory risk-weightings which vary primarily by counterparty type and asset class. BNY Mellon is required to comply with Advanced Approaches reporting and public disclosures. For purposes of determining whether we meet minimum risk-based capital requirements under the U.S. capital rules, our CET1 ratio, Tier 1 capital ratio, and total capital ratio is the lower of each ratio as calculated under the Standardized Approach and under the Advanced Approaches framework (based on currently applicable buffers).

U.S. Capital Rules – Standardized Approach

The Standardized Approach calculates risk-weighted assets in the denominator of capital ratios using a broad array of risk-weighting categories that are intended to be risk sensitive. The risk-weights for the Standardized Approach generally range from 0% to 1,250%. Higher risk-weights under the Standardized Approach apply to a variety of exposures, including certain securitization exposures, equity exposures, claims on securities firms and exposures to counterparties on OTC derivatives.

Securities finance transactions, including transactions in which we serve as agent and provide securities replacement indemnification to a securities lender, are treated as repo-style transactions under the U.S. capital rules. The rules do not permit a banking organization to use a simple VaR approach to calculate exposure amounts for repo-style transactions or to use internal models to calculate the exposure amount for the counterparty credit exposure for repo-style transactions under the Standardized Approach (although these methodologies are allowed in the Advanced Approaches). Under the Standardized Approach, a banking organization may use a collateral haircut approach to recognize the credit risk mitigation benefits of financial collateral that secures a repo-style transaction, including an agented securities lending transaction, among other transactions. To apply the collateral haircut approach, a banking organization must determine the exposure amount and the relevant risk weight for the counterparty and collateral posted.

Leverage Ratios

The U.S. capital rules require a minimum 4% leverage ratio for all banking organizations, as well as a 3% Basel III-based SLR for Advanced Approaches banking organizations, including BNY Mellon. Unlike the Tier 1 leverage ratio, the SLR includes certain off-balance sheet exposures in the denominator, including the potential future credit exposure of derivative contracts and 10% of the notional amount of unconditionally cancelable commitments.

The U.S. G-SIBs (including BNY Mellon) are subject to an enhanced SLR, which requires us to maintain an SLR of greater than 5% (composed of the current minimum requirement of 3% plus a greater than 2% buffer) and requires bank subsidiaries of those BHCs to maintain at least a 6% SLR in order to qualify as "well capitalized" under the prompt corrective action regulations discussed below.

The Agencies have adopted a final rule to exclude certain central bank deposits from the total leverage exposure, the SLR denominator, and related TLAC and LTD measures of custody banks, including BNY

Mellon and The Bank of New York Mellon. Under the final rule, qualifying central banks include a Federal Reserve Bank, the European Central Bank or a central bank of a member country of the Organisation for Economic Co-operation and Development ("OECD"), provided that an exposure to the OECD member country receives a zero percent risk-weighting and the sovereign debt of such country is not, and has not been, in default in the past five years. The central bank deposit exclusion from the SLR denominator equals the average daily balance over the applicable quarter of all deposits placed with a qualifying central bank up to an amount equal to the on-balance sheet deposit liabilities that are linked to fiduciary or custodial and safekeeping accounts.

On April 11, 2018, the Federal Reserve and the OCC issued a joint notice of proposed rule-making that would recalibrate the enhanced SLR standards that apply to U.S. G-SIBs and certain of their IDI subsidiaries. The proposed rule would replace the 2% SLR buffer that currently applies to all U.S. G-SIBs with a buffer equal to 50% of the firm's risk-based G-SIB surcharge. For IDI subsidiaries of U.S. G-SIBs regulated by the Federal Reserve or the OCC, the proposal would replace the current 6% SLR threshold requirement for those institutions to be considered "well capitalized" under the prompt corrective action framework with an SLR of at least 3% plus 50% of the G-SIB surcharge applicable to their top-tier holding companies. The proposed rule would also make corresponding changes to the TLAC SLR buffer and LTD requirements for U.S. G-SIBs. The Federal Reserve and OCC have not yet issued a final rule.

BCBS Revisions to Components of Basel III

In December 2017, the BCBS released revisions to Basel III intended to reduce variability of RWA and improve the comparability of banks' risk-based capital ratios. Among other measures, the final revisions: (i) establish a revised Standardized Approach for credit risk that enhances the Standardized Approach's granularity and risk sensitivity; (ii) adjust the internal ratings-based approaches for credit risk by removing the use of the advanced internal ratings-based approach for certain asset classes and establishing input floors for the calculation of RWA; (iii) replace the advanced measurement approach for operational risk with a revised Standardized Approach for operational risk based on measures of a bank's income and historical losses; (iv) revise the leverage ratio exposure measure, establish a "leverage ratio buffer" for G-SIBs, set at 50% of a G-SIB's risk-based capital surcharge, and allow national discretion to exclude central bank placements in limited circumstances (see "Leverage Ratios" above); and (v) introduce a new 72.5% output floor based on the Standardized Approach.

In January 2019, the BCBS released revised minimum capital requirements for market risk. While the U.S. regulators have implemented or issued proposals to implement certain aspects of these revised Basel standards, there is continuing uncertainty regarding the extent to which, and manner in which, the U.S. regulators will implement them.

Standardized Approach for Measuring Counterparty Credit Risk Exposures

The Agencies have jointly issued a final rule that amends the U.S. capital rules to implement a new approach for calculating the exposure amount for derivative contracts, which is called the Standardized Approach for Counterparty Credit Risk ("SA-CCR"). The final rule also incorporates SA-CCR into the determination of exposure amount of derivatives for total leverage exposure under the SLR and the cleared transaction framework under the U.S. capital rules.

Total Loss-Absorbing Capacity

The Federal Reserve imposes external TLAC and related requirements for U.S. G-SIBs, including BNY Mellon, at the top-tier holding company.

U.S. G-SIBs are required to maintain a minimum eligible external TLAC equal to the greater of (i) 18% of RWAs plus a buffer (to be met using only CET1) equal to the sum of 2.5% of RWAs, the G-SIB surcharge calculated under method 1 and any applicable countercyclical buffer; and (ii) 7.5% of their total leverage exposure (the denominator of the SLR) plus a buffer (to be met using only Tier 1 Capital) equal to 2%.

U.S. G-SIBs are also required to maintain minimum external eligible LTD equal to the greater of (i) 6% of RWAs plus the G-SIB surcharge (calculated using the greater of method 1 and method 2), and (ii) 4.5% of total leverage exposure. In order to be deemed eligible LTD, debt instruments must, among other requirements, be unsecured, not be structured notes, and have a maturity of at least one year from the date

of issuance. In addition, LTD issued on or after Dec. 31, 2016 must (i) not have acceleration rights, other than in the event of non-payment or the bankruptcy or insolvency of the issuer and (ii) be governed by U.S. law. However, debt issued by a U.S. G-SIB prior to Dec. 31, 2016 is permanently grandfathered to the extent these securities would be ineligible only due to containing impermissible acceleration rights or being governed by foreign law.

Further, the top-tier holding companies of U.S. G-SIBs are not permitted to issue certain guarantees of subsidiary liabilities, incur liabilities guaranteed by subsidiaries, issue short-term debt to third parties, or enter into derivatives and certain other financial contracts with external counterparties. Certain liabilities are capped at 5% of the value of the U.S. G-SIB's eligible external TLAC instruments. The Federal Reserve considered requiring internal TLAC at domestic subsidiaries of U.S. G-SIBs, but has not proposed rules regarding these instruments.

Foreign jurisdictions may impose internal TLAC requirements on the foreign subsidiaries of U.S. G-SIBs. The European Union's Capital Requirements Regulation 2 ("CRR2") requires EU material subsidiaries of non-EU G-SIBs (including BNY Mellon) to maintain a minimum level of internal loss absorbing capacity. The Bank of New York Mellon SA/NV ("BNY Mellon SA/NV") is considered an EU material subsidiary for purposes of this regulation and is, therefore, subject to an internal TLAC requirement.

Prompt Corrective Action

The FDI Act, as amended by the Federal Deposit Insurance Corporation Improvement Act of 1991 ("FDICIA"), requires the Agencies to take "prompt corrective action" in respect of depository institutions that do not meet specified capital requirements. FDICIA establishes five capital categories for FDIC-insured banks: "well capitalized," "adequately capitalized," "undercapitalized," "significantly undercapitalized," and "critically undercapitalized." The FDI Act imposes progressively more restrictive constraints on operations, management and capital distributions the less capital the institution holds. While these regulations apply only to banks, such as The Bank of New York Mellon and BNY Mellon, N.A., the Federal Reserve is authorized to take appropriate action against the parent BHC, such as the Parent, based on the undercapitalized status of any banking subsidiary. In certain circumstances, the Parent would be required to guarantee the performance of the capital restoration plan if one of our banking subsidiaries were undercapitalized.

The Agencies' prompt corrective action framework contains "well capitalized" thresholds for IDIs. Under these rules, an IDI must have the capital ratios as detailed in the "Capital" disclosure in order to satisfy the quantitative ratio requirements to be deemed "well capitalized."

Liquidity Standards – Basel III and U.S. Rules

BNY Mellon is subject to the U.S. LCR Rule, which is designed to ensure that BNY Mellon and certain domestic bank subsidiaries maintain an adequate level of unencumbered HQLA equal to their expected net cash outflow for a 30-day time horizon under an acute liquidity stress scenario. As of Dec. 31, 2022, the Parent and its domestic bank subsidiaries were in compliance with applicable LCR requirements.

The Agencies have issued a final NSFR rule that implements a quantitative long-term liquidity requirement applicable to large and internationally active banking organizations, including BNY Mellon. Under the final rule, BNY Mellon's NSFR is expressed as a ratio of its available stable funding to its required stable funding amount, and BNY Mellon is required to maintain an NSFR of 1.0. The effective date of the final NSFR rule was July 1, 2021, with the exception of certain disclosure requirements, which will begin to apply in 2023. As of Dec. 31, 2022, BNY Mellon was in compliance with the NSFR rule.

Separately, as noted above, the SIFI Rules impose additional liquidity requirements for BHCs with $100 billion or more in total assets, including BNY Mellon, including an independent review of liquidity risk management; establishment of cash flow projections; a contingency funding plan and liquidity risk limits; liquidity stress testing under multiple stress scenarios and time horizons tailored to the specific products and profile of the company; and maintenance of a liquidity buffer of unencumbered highly liquid assets sufficient to meet projected net cash outflows over 30 days under a range of stress scenarios.

Volcker Rule

The provisions of the Dodd-Frank Act commonly referred to as the "Volcker Rule" prohibit "banking entities," including BNY Mellon, from engaging in

proprietary trading and limit our sponsorship of, and investments in, private equity and hedge funds ("covered funds"), including our ability to own or provide seed capital to covered funds. In addition, the Volcker Rule restricts us from engaging in certain transactions with covered funds (including, without limitation, certain U.S. funds for which BNY Mellon acts as both sponsor/manager and custodian). These restrictions are subject to certain exceptions.

The restrictions concerning proprietary trading contain limited exceptions for, among other things, bona fide liquidity risk management and risk-mitigating hedging activities, as well as certain classes of exempted instruments, including government securities. Ownership interests in covered funds are generally limited to 3% of the total number or value of the outstanding ownership interests of any individual fund at any time more than one year after the date of its establishment. The aggregate value of all such ownership interests in covered funds is limited to 3% of the banking organization's Tier 1 capital, and such interests are subject to a deduction from its Tier 1 capital. The 2019 amendments to the Volcker Rule (discussed below) remove the requirements that ownership interests in third-party covered funds held under the underwriting and market-making exemptions be subject to the aggregate limit and capital deduction but preserve these requirements for ownership interests in covered funds sponsored or organized by BNY Mellon.

The Volcker Rule regulations also require us to develop and maintain a compliance program. In 2019, the Agencies, the Commodity Futures Trading Commission (the "CFTC") and the Securities and Exchange Commission (the "SEC") modified the regulations implementing the Volcker Rule. The most impactful aspects of the revisions with respect to BNY Mellon concern the compliance requirements applicable to institutions with moderate exposure to trading assets and trading liabilities, which are institutions with less than $20 billion and more than $1 billion of trading assets and trading liabilities. Specifically, among other revisions, such "moderate trading" banks are no longer required to file an annual CEO attestation and quantitative metrics. Furthermore, the comprehensive six-pillar compliance program associated with the Volcker Rule will no longer apply to "moderate trading" banks; rather, such banks are permitted to tailor their compliance programs to the size and nature of their activities. BNY Mellon is treated as a "moderate trading" bank under the revised Volcker Rule. The final revisions also clarified and amended certain definitions, requirements and exemptions.

On June 25, 2020, a second set of amendments to the Volcker Rule was released, which is principally focused on the restrictions on banking entities' investments in, sponsorship of, and other relationships with covered funds. Generally, the changes establish new exclusions from the covered fund definition for certain types of investment vehicles, modify the eligibility criteria for certain existing exclusions, and clarify and modify other provisions with respect to investment in, sponsoring of and transactions with covered funds.

Derivatives

Title VII of the Dodd-Frank Act imposes a comprehensive regulatory structure on the OTC derivatives markets in which BNY Mellon operates, including requirements relating to the business conduct of dealers, trade reporting, margin and recordkeeping. Title VII also requires persons acting as swap dealers, including The Bank of New York Mellon, to register with the CFTC and become subject to the CFTC's supervisory, examination and enforcement powers. Additionally, Title VII requires persons acting as security-based swap dealers to register with the SEC. The Bank of New York Mellon is registered as a security-based swap dealer.

In addition, because BNY Mellon is subject to supervision by the Federal Reserve, we must comply with the U.S. prudential margin rules for variation and initial margin with respect to its OTC swap transactions. Furthermore, various BNY Mellon subsidiaries are also subject to OTC derivatives regulation by local authorities in Europe and Asia.

ESG Regulations

On March 21, 2022, the SEC proposed climate-related disclosure requirements that would, among other things, require disclosure of direct and indirect greenhouse gas emissions, with certain emissions disclosures subject to third-party attestation requirements; climate-related scenario analysis (if the issuer conducts scenario analyses), together with qualitative and quantitative information about the hypothetical future climate scenarios used in its analysis; climate transition plans or climate-related targets or goals, along with disclosure of progress

against any such plans, targets or goals; climate-related risks over the short-, medium- and long-term; qualitative and quantitative information regarding climate-related risks and historical impacts in audited financial statements; corporate governance of climate-related risks; and climate-related risk-management processes.

On May 25, 2022, the SEC proposed for public comment a framework requiring certain funds that are registered investment companies ("RICs") under the Investment Company Act of 1940, as amended (the "1940 Act"), including mutual funds, closed end funds and exchange-traded funds ("ETFs"), that consider ESG factors in their investment process to provide additional disclosures in their registration statements and shareholder reports. The disclosure requirements would vary depending on the fund's investment strategy. The SEC also proposed similar amendments to the disclosure requirements for registered investment advisers under the Investment Advisers Act of 1940, as amended ("RIAs") that consider ESG factors as part of their advisory business. Specifically, the proposal would require RIAs to provide a description of the ESG factors they consider in providing advisory services and how they are incorporated when formulating investment advice.

On Dec. 2, 2022, the Federal Reserve proposed for public comment "Principles for Climate-Related Financial Risk Management for Large Financial Institutions." The principles provide a high-level framework for the safe and sound management of exposures to climate-related financial risks for certain Federal Reserve-supervised financial institutions, including BNY Mellon. The principles address governance; policies, procedures, and limits; strategic planning; risk management; data, risk measurement and reporting; and scenario analysis.

Under the European Union's Corporate Sustainability Reporting Directive ("CSRD"), in-scope entities will be subject to sustainability reporting requirements to be phased in starting Jan. 1, 2024. Entities covered by the CSRD include EU entities or parent entities of EU groups that meet at least two of the following criteria in the relevant financial year: (i) total assets exceeding €20 million; (ii) net turnover exceeding €40 million; and (iii) an average number of employees exceeding 250. These entities will be required to report on both the impacts of the activities of the entity or group on people and the environment as well as how sustainability matters affect the financial performance of the entity or group. We are evaluating the potential impact of the CSRD.

SEC Rules on Mutual Funds and RIAs

SEC regulations impose requirements on mutual funds, exchange-traded funds and other RICs under the 1940 Act. Among other things, these rules require mutual funds (other than money market funds) to provide portfolio-wide and position-level holdings data to the SEC on a monthly basis.

The regulations also impose liquidity risk management requirements that are intended to reduce the risk that funds will not be able to meet shareholder redemptions and to minimize the impact of redemptions on remaining shareholders.

On May 25, 2022, the SEC proposed for comment amendments to RIC naming convention rules. The proposal would expand the scope of terms that the SEC considers materially deceptive and misleading in a RIC's name without a corresponding policy to invest at least 80% of the fund's net asset value (plus certain borrowings) in the manner suggested by the fund's name ("80% Policy"). The proposal would require an 80% Policy for a RIC with a name that indicates that the fund's investment decisions incorporate one or more ESG factors and for any fund that includes "growth" or "value" in its name.

On Oct. 26, 2022, the SEC proposed for comment new rules to prohibit RIAs from outsourcing certain services and functions without conducting due diligence and monitoring of the service providers. The proposal would apply to RIAs that outsource select "covered functions," which include those services or functions that are necessary for providing advisory services in compliance with federal securities laws and that, if not performed or performed negligently, would result in harm to clients. The proposal would further require RIAs to conduct due diligence and monitoring for all third-party recordkeepers and obtain reasonable assurances that the recordkeepers will meet certain standards. Finally, it would require RIAs to maintain books and records related to the new rule's oversight obligations and to report census-type information about the service providers covered under the rule.

On Nov. 2, 2022, the SEC proposed for public comment rule amendments that would require the adoption of "swing pricing" and a "hard close" by all

open-end RICs other than money market funds and ETFs ("Open-End Funds"). The requirements would alter the manner in which shares in Open-End Funds are traded, as shareholders would no longer receive the net asset value ("NAV") per share for their transactions but instead could receive a price more or less than the NAV depending on whether a "swing factor" was applied to their transaction. This swing factor would be the amount by which the Open-End Fund adjusts its per-share NAV and would represent a good-faith estimate of the transaction costs imposed on current shareholders of the Open-End Fund by the transacting shareholders. To facilitate the operation of swing pricing, the SEC also proposed to require a "hard close" for Open-End Funds, which would make a purchase or sale order for shares of an Open-End Fund eligible for a given day's price only if the Open-End Fund or certain designated agents receive the order before the time when the Open-End Fund calculates its NAV, which is typically as of 4:00 PM Eastern Time.

Recovery and Resolution Planning

As required by the Dodd-Frank Act, large financial institutions, such as BNY Mellon, are required to submit periodically to the Federal Reserve and the FDIC a plan – referred to as the 165(d) resolution plan – for their rapid and orderly resolution in the event of material financial distress or failure. In addition, certain large IDIs, such as The Bank of New York Mellon, are required to submit periodically to the FDIC a separate plan for resolution in the event of the institution's failure. The public portions of these resolution plans are available on the Federal Reserve's and FDIC's websites. BNY Mellon also maintains a comprehensive recovery plan, which describes actions it could take to avoid failure if faced with financial stress.

In 2019, the Federal Reserve and FDIC issued a final rule modifying certain requirements for the 165(d) resolution plan. The final rule requires U.S. G-SIBs, such as BNY Mellon, to file alternating full and more limited, targeted resolution plans every two years. BNY Mellon submitted a targeted resolution plan on July 1, 2021. The Federal Reserve and FDIC found no deficiencies or shortcomings in BNY Mellon's 2021 resolution plan submission. BNY Mellon's next full resolution plan is due to be submitted on July 1, 2023. The final rule does not materially modify the components or informational requirements of full resolution plans.

If the Federal Reserve and FDIC jointly determine that our 165(d) resolution plan is not credible and we fail to address the deficiencies in a timely manner, the FDIC and the Federal Reserve may jointly impose more stringent capital, leverage or liquidity requirements or restrictions on our growth, activities or operations. If we continue to fail to adequately remedy any deficiencies, we could be required to divest assets or operations that the regulators determine necessary to facilitate our orderly resolution.

The resolution strategy set out in our 165(d) resolution plan is a single point of entry strategy, whereby certain key operating subsidiaries would be provided with sufficient capital and liquidity to operate in the event of material financial stress or failure, and only our parent holding company would file for bankruptcy. In connection with our single point of entry resolution strategy, we have established the IHC to facilitate the provision of capital and liquidity resources to certain key subsidiaries in the event of material financial distress or failure. In addition, we have a binding support agreement in place that requires the IHC to provide that support. The support agreement required the Parent to transfer its intercompany loans and most of its cash to the IHC and requires the Parent to continue to transfer cash and other liquid financial assets to the IHC on an ongoing basis.

BNY Mellon and the other U.S. G-SIBs are also subject to heightened supervisory expectations for recovery and resolution preparedness under Federal Reserve rules and guidance. The Federal Reserve incorporates reviews of our capabilities in respect of recovery and resolution preparedness as part of its ongoing supervision of BNY Mellon.

In the European Economic Area ("EEA"), the European Union Bank Recovery and Resolution Directive ("BRRD") provides the legal framework for recovery and resolution planning, including a set of harmonized powers to resolve or implement recovery of in-scope institutions, such as EEA subsidiaries of non-EEA banks. BRRD gives relevant EEA regulators various powers, including (i) powers to intervene pre-resolution to require an institution to take remedial steps to avoid the need for resolution; (ii) resolution tools and powers to facilitate the resolution of failing entities, such as the power to "bail-in" the debt of an institution (including certain deposit obligations); (iii) the power to require a firm

to change its structure to remove impediments to resolvability; and (iv) powers to require in-scope institutions to prepare recovery plans. Under the BRRD, resolution authorities (rather than the institutions themselves) are responsible for drawing up resolution plans based on information provided by relevant institutions.

Under BRRD, in-scope institutions are required to maintain a minimum requirement for their own funds, (defined as regulatory capital), and eligible liabilities ("MREL") that can be written down or bailed-in to absorb losses. MREL is set on a case-by-case basis for each institution subject to BRRD and is applicable to all EU-domiciled credit institutions and certain other firms subject to BRRD. BNY Mellon SA/NV is subject to MREL.

The BRRD has been amended by the Bank Resolution and Recovery Directive 2 ("BRRD2"). Key changes introduced by BRRD2 include incorporation of the Financial Stability Board's ("FSB") standard on TLAC into existing EU rules on MREL, expansion of the BRRD moratorium tool and introduction of an EU-wide requirement for contractual recognition of resolution stay powers.

Some jurisdictions, including the UK, already had a requirement for contractual recognition of resolution stay powers. While the UK was a member of the EU (and during the subsequent Brexit transition period, which ended on Dec. 31, 2020), the UK transposed most requirements of BRRD and BRRD2 in local legislation and regulation.

Rules on Resolution Stays for Qualified Financial Contracts

The Agencies' regulations require U.S. G-SIBs (and their subsidiaries and controlled entities) and the U.S. operations of foreign G-SIBs to amend their covered qualified financial contracts ("QFCs"), thereby facilitating the application of U.S. special resolution regimes as necessary.

The regulations allow these G-SIBs to comply by amending covered QFCs (with the consent of relevant counterparties) using the International Swaps and Derivatives Association ("ISDA") 2018 U.S. Resolution Stay Protocol (the "Protocol"), ISDA 2015 Universal Stay Protocol or by executing appropriate bilateral amendments to the covered QFCs. BNY Mellon entities which have been confirmed to engage in covered QFC activities have adhered to the Protocol and, where necessary, have executed bilateral amendments to cover QFCs.

Cybersecurity and Computer Security Regulation

The New York State Department of Financial Services ("NYSDFS") requires financial institutions regulated by NYSDFS, including The Bank of New York Mellon, to establish a cybersecurity program, adopt a written cybersecurity policy, designate a chief information security officer, and have policies and procedures in place to ensure the security of information systems and non-public information accessible to, or held by, third parties. The NYSDFS rule also includes a variety of other requirements to protect the confidentiality, integrity and availability of information systems, as well as the annual delivery of a certificate of compliance.

The Agencies have adopted a final rule imposing notification requirements for significant computer security incidents on banking organizations. Under the final rule, a BHC, state member bank or national bank, including the Parent, The Bank of New York Mellon and BNY Mellon, N.A., are required to notify the Federal Reserve or OCC, as applicable, within 36 hours of incidents that could result in the banking organization's inability to deliver services to a material portion of its customer base, disrupt the banking organization's lines of businesses the failure of which would result in material losses, or disrupt operations the failure of which would threaten the financial stability of the U.S.

On March 9, 2022, the SEC published proposed disclosure rules and amendments regarding cybersecurity risk management, governance and incident reporting by public companies. Under the proposal, public companies, including The Bank of New York Mellon Corporation, would be required to file a Form 8-K within four business days of determining that it had suffered a material cybersecurity incident. The proposal also includes disclosure requirements regarding policies and procedures for the identification and management of cybersecurity risks, oversight by the Board of Directors and management over cybersecurity risks, and Board member expertise in cybersecurity matters.

Insolvency of an Insured Depository Institution or a Bank Holding Company; Orderly Liquidation Authority

If the FDIC is appointed as conservator or receiver for an IDI such as The Bank of New York Mellon or BNY Mellon, N.A., upon its insolvency or in certain other circumstances, the FDIC has the power to:

- Transfer any of the depository institution's assets and liabilities to a new obligor, including a newly formed "bridge" bank without the approval of the depository institution's creditors;
- Enforce the terms of the depository institution's contracts pursuant to their terms without regard to any provisions triggered by the appointment of the FDIC in that capacity; or
- Repudiate or disaffirm any contract or lease to which the depository institution is a party, the performance of which is determined by the FDIC to be burdensome and the disaffirmance or repudiation of which is determined by the FDIC to promote the orderly administration of the depository institution.

In addition, under federal law, the claims of holders of domestic deposit liabilities and certain claims for administrative expenses against an IDI would be afforded a priority over other general unsecured claims against such an institution, including claims of debt holders of the institution, in the "liquidation or other resolution" of such an institution by any receiver. As a result, whether or not the FDIC ever sought to repudiate any debt obligations of The Bank of New York Mellon or BNY Mellon, N.A., the debt holders would be treated differently from, and could receive, if anything, substantially less than, the depositors of the bank.

The Dodd-Frank Act created a resolution regime (known as the "orderly liquidation authority") for systemically important financial companies, including BHCs and their affiliates. Under the orderly liquidation authority, the FDIC may be appointed as receiver for the systemically important institution, and its failed nonbank subsidiaries, for purposes of liquidating the entity if, among other conditions, it is determined that the institution is in default or in danger of default and the failure poses a risk to the stability of the U.S. financial system.

If the FDIC is appointed as receiver under the orderly liquidation authority, then the powers of the receiver, and the rights and obligations of creditors and other parties who have dealt with the institution, would be determined under the Dodd-Frank Act's orderly liquidation authority provisions, and not under the insolvency law that would otherwise apply. The powers of the receiver under the orderly liquidation authority were based on the powers of the FDIC as receiver for depository institutions under the FDI Act. However, the provisions governing the rights of creditors under the orderly liquidation authority were modified in certain respects to reduce disparities with the treatment of creditors' claims under the U.S. Bankruptcy Code as compared to the treatment of those claims under the new authority. Nonetheless, substantial differences in the rights of creditors exist between these two regimes, including the right of the FDIC to disregard the strict priority of creditor claims in some circumstances, the use of an administrative claims procedure to determine creditors' claims (as opposed to the judicial procedure utilized in bankruptcy proceedings), and the right of the FDIC to transfer assets or liabilities of the institution to a third party or a "bridge" entity.

Depositor Preference

Under U.S. federal law, claims of a receiver of an IDI for administrative expenses and claims of holders of U.S. deposit liabilities (including foreign deposits that are payable in the U.S. as well as in a foreign branch of the depository institution) are afforded priority over claims of other unsecured creditors of the institution, including depositors in non-U.S. branches. As a result, such depositors could receive, if anything, substantially less than the depositors in U.S. offices of the depository institution.

Transactions with Affiliates

Transactions between BNY Mellon's banking subsidiaries, on the one hand, and the Parent and its nonbank subsidiaries and affiliates, on the other, are subject to certain restrictions, limitations and requirements, which include limits on the types and amounts of transactions (including extensions of credit and asset purchases by our banking subsidiaries) that may take place and generally require those transactions to be on arm's-length terms. In general, extensions of credit by a BNY Mellon banking subsidiary to any nonbank affiliate, including the Parent, must be secured by designated amounts of specified collateral and are limited in the aggregate to 10% of the relevant bank's capital and surplus for transactions with a single affiliate and to 20% of the relevant bank's capital and surplus for

transactions with all affiliates. There are also limitations on affiliate credit exposures arising from derivative transactions and securities lending and borrowing transactions.

Deposit Insurance

Our U.S. banking subsidiaries, including The Bank of New York Mellon and BNY Mellon, N.A., accept deposits, and those deposits have the benefit of FDIC insurance up to the applicable limit. The current limit for FDIC insurance for deposit accounts is $250,000 per depositor at each insured bank. Under the FDI Act, insurance of deposits may be terminated by the FDIC upon a finding that the IDI has engaged in unsafe and unsound practices, is in an unsafe or unsound condition to continue operations or has violated any applicable law, regulation, rule, order or condition imposed by a bank's federal regulatory agency.

The FDIC's Deposit Insurance Fund (the "DIF") is funded by assessments on IDIs. The FDIC assesses DIF premiums based on a bank's average consolidated total assets, less the average tangible equity of the IDI during the assessment period. For larger institutions, such as The Bank of New York Mellon and BNY Mellon, N.A., assessments are determined based on CAMELS ratings and forward-looking financial measures to calculate the assessment rate, which is subject to adjustments by the FDIC, and the assessment base.

Under the FDIC's regulations, a custody bank, including The Bank of New York Mellon and BNY Mellon, N.A., may deduct from its assessment base 100% of cash and balances due from depository institutions, securities, federal funds sold, and securities purchased under agreement to resell with a Standardized Approach risk-weight of 0% and may deduct 50% of such asset types with a Standardized Approach risk-weight of greater than 0% and up to and including 20%. This assessment base deduction may not exceed the average value of deposits that are classified as transaction accounts and are identified by the bank as being directly linked to a fiduciary or custodial and safekeeping account.

Source of Strength and Liability of Commonly Controlled Depository Institutions

BHCs are required by law to act as a source of financial and managerial strength to their bank subsidiaries. BNY Mellon has a statutory obligation to commit resources to its bank subsidiaries in times of financial distress. In addition, any loans by BNY Mellon to its bank subsidiaries would be subordinate in right of payment to depositors and to certain other indebtedness of its banks. In the event of a BHC's bankruptcy, any commitment by the BHC to a federal bank regulator to maintain the capital of a subsidiary bank will be assumed by the bankruptcy trustee and entitled to a priority of payment. In addition, in certain circumstances, BNY Mellon's IDI subsidiaries could be held liable for losses incurred by another BNY Mellon IDI subsidiary. In the event of impairment of the capital stock of one of BNY Mellon's national bank subsidiaries or The Bank of New York Mellon, BNY Mellon, as the banks' stockholder, could be required to pay such deficiency.

Incentive Compensation Arrangements Proposal

Section 956 of the Dodd-Frank Act requires federal regulators to prescribe regulations or guidelines regarding incentive-based compensation practices at certain financial institutions, including BNY Mellon. In April 2016, a joint proposed rule was released, replacing a previous 2011 proposal, which each of six agencies must separately approve. The time frame for final implementation, if any, is currently unknown.

Anti-Money Laundering ("AML") and the USA PATRIOT Act

A major focus of governmental policy on financial institutions has been aimed at combating money laundering and terrorist financing. The USA PATRIOT Act of 2001 contains numerous AML requirements for financial institutions that are applicable to BNY Mellon's bank, broker-dealer and investment adviser subsidiaries and mutual funds and private investment companies advised or sponsored by our subsidiaries. Those regulations impose obligations on financial institutions to maintain a broad AML program that includes internal controls, independent testing, compliance management personnel, training, and customer due diligence processes, as well as appropriate policies, procedures and controls to detect, prevent and report money laundering, terrorist financing and other suspicious activity, and to verify the identity of their customers. Certain of those regulations impose specific due diligence requirements on financial institutions that maintain correspondent or private banking relationships with non-U.S. financial institutions or persons.

The Anti-Money Laundering Act of 2020 ("AMLA"), which amends the Bank Secrecy Act ("BSA"), was enacted to comprehensively reform and modernize U.S. AML laws. Among other things, the AMLA codifies a risk-based approach to AML compliance for financial institutions; requires the development of standards by the U.S. Department of the Treasury for evaluating technology and internal processes for BSA compliance; and expands enforcement- and investigation-related authority, including a significant expansion in the available sanctions for certain BSA violations and instituting BSA whistleblower incentives and protections. The AMLA contains many statutory provisions that require additional rulemakings, reports and other measures, and the rulemaking process has begun for several of these provisions. In June 2021, the first government-wide priorities for anti-money laundering and countering the financing of terrorism ("AML/CFT Priorities") were published. These AML/CFT Priorities will need to be incorporated into banks' risk-based BSA compliance programs after completion of the rulemaking process and on the effective date of the final regulations. The impact of the AMLA will depend on, among other things, the completion of the rulemaking process and the issuing of implementation guidance.

Financial Crimes Enforcement Network ("FinCEN")

FinCEN has issued rules under the BSA that apply to covered financial institutions, including The Bank of New York Mellon and BNY Mellon, N.A., setting forth five pillars of an effective AML program: development of internal policies, procedures and related controls; designation of a compliance officer; a thorough and ongoing training program; independent review for compliance; and customer due diligence ("CDD"). CDD requires a covered financial institution to implement and maintain risk-based procedures for conducting CDD that include the identification and verification of any beneficial owner(s) of each legal entity customer at the time a new account is opened.

NYSDFS Anti-Money Laundering and Anti-Terrorism Regulations

The NYSDFS has also issued regulations requiring regulated institutions, including The Bank of New York Mellon, to maintain a transaction monitoring program to monitor transactions for potential BSA and AML violations and suspicious activity reporting, and a watch list filtering program to interdict transactions prohibited by applicable sanctions programs.

The regulations require a regulated institution to maintain programs to monitor and filter transactions for potential BSA and AML violations and prevent transactions with sanctioned entities. The regulations also require institutions to submit annually a Board resolution or senior officer compliance finding confirming steps taken to ascertain compliance with the regulation.

Privacy and Data Protection

The privacy provisions of the Gramm-Leach-Bliley Act generally prohibit financial institutions, including BNY Mellon, from disclosing nonpublic personal financial information of consumer customers to third parties for certain purposes (primarily marketing) unless customers have the opportunity to "opt out" of the disclosure. The Fair Credit Reporting Act restricts information sharing among affiliates for marketing purposes.

In the EU, privacy law is primarily regulated by the General Data Protection Regulation ("GDPR"). The GDPR contains enhanced compliance obligations and increased penalties for non-compliance compared to prior EU data protection legislation.

Acquisitions/Transactions

Federal and state laws impose notice and approval requirements for mergers and acquisitions involving depository institutions or BHCs. The Bank Holding Company Act of 1956, as amended by the Gramm-Leach-Bliley Act and by the Dodd-Frank Act (the "BHC Act"), requires the prior approval of the Federal Reserve for the direct or indirect acquisition by a BHC of more than 5% of any class of the voting shares or all or substantially all of the assets of a commercial bank, savings and loan association or BHC. In reviewing bank acquisition and merger applications, the bank regulatory authorities will consider, among other things, the competitive effect of the transaction, financial and managerial resources, including the capital position of the combined organization, convenience and needs of the community factors, including the applicant's record under the Community Reinvestment Act of 1977 (the "CRA"), the effectiveness of the subject organizations in combating money laundering activities and the risk to the stability of the U.S. banking or financial system. In addition, prior

Federal Reserve approval would be required for BNY Mellon to acquire direct or indirect ownership or control of any voting shares of a company with assets of $10 billion or more that is engaged in activities that are "financial in nature."

Rating System for the Supervision of Large Financial Institutions

The Federal Reserve's rating system for the supervision of large financial institutions ("LFIs") applies to, among other entities, all BHCs with total consolidated assets of $100 billion or more, including BNY Mellon.

The LFI rating system includes a four-level rating scale and three component ratings. The four levels are: Broadly Meets Expectations; Conditionally Meets Expectations; Deficient-1; and Deficient-2. The component ratings are assigned for: Capital Planning and Positions; Liquidity Risk Management and Positions; and Governance and Controls. A firm must be rated "Broadly Meets Expectations" or "Conditionally Meets Expectations" for each of its component ratings to be considered "well managed" in accordance with various statutes and regulations that permit additional activities, prescribe expedited procedures or provide other benefits for "well managed" firms.

Regulated Entities of BNY Mellon and Ancillary Regulatory Requirements

BNY Mellon is registered as an FHC under the BHC Act. We are subject to supervision by the Federal Reserve. In general, the BHC Act limits an FHC's business activities to banking, managing or controlling banks, performing certain servicing activities for subsidiaries, engaging in activities incidental to banking, and engaging in any activity, or acquiring and retaining the shares of any company engaged in any activity, that is either financial in nature or complementary to a financial activity and does not pose a substantial risk to the safety and soundness of depository institutions or the financial system generally.

A BHC's ability to maintain FHC status is dependent on: (i) its U.S. depository institution subsidiaries qualifying on an ongoing basis as "well capitalized" and "well managed" under the prompt corrective action regulations of the appropriate regulatory agency (discussed above under "Prompt Corrective Action"); (ii) the BHC itself qualifying on an ongoing basis as "well capitalized" and "well managed" under applicable Federal Reserve regulations; and (iii) its U.S. depository institution subsidiaries continuing to maintain at least a "satisfactory" rating under the CRA.

An FHC that does not continue to meet all the requirements for FHC status will, depending on which requirements it fails to meet, lose the ability to undertake new activities, continue current activities, or make acquisitions, that are not generally permissible for BHCs without FHC status. As of Dec. 31, 2022, BNY Mellon and our U.S. bank subsidiaries were "well capitalized" based on the ratios and rules applicable to them.

The Bank of New York Mellon, BNY Mellon's largest banking subsidiary, is a New York state-chartered bank, and a member of the Federal Reserve System and is subject to regulation, supervision and examination by the Federal Reserve, the FDIC and the NYSDFS. BNY Mellon's national bank subsidiaries, BNY Mellon, N.A. and The Bank of New York Mellon Trust Company, National Association, are chartered as national banking associations subject to primary regulation, supervision and examination by the OCC.

We operate a number of broker-dealers that engage in securities underwriting and other broker-dealer activities in the U.S. These companies are SEC-registered broker-dealers and members of Financial Industry Regulatory Authority, Inc. ("FINRA"), a securities industry self-regulatory organization. BNY Mellon's nonbank subsidiaries engaged in securities-related activities are regulated by supervisory agencies in the countries in which they conduct business.

Certain of BNY Mellon's public finance and advisory activities are regulated by the Municipal Securities Rulemaking Board and are required under the SEC's Municipal Advisors Rule to register with the SEC if they provide advice to municipal entities or certain other persons on the issuance of municipal securities, or about certain investment strategies or municipal derivatives.

Certain of BNY Mellon's subsidiaries are registered with the CFTC as commodity pool operators, introducing brokers and/or commodity trading advisors and, as such, are subject to CFTC regulation. The Bank of New York Mellon is provisionally registered as a swap dealer (as defined in the Dodd-

Frank Act) with the CFTC and is a member of the National Futures Association ("NFA") in that same capacity. As a swap dealer, The Bank of New York Mellon is subject to regulation, supervision and examination by the CFTC and NFA.

Certain of our subsidiaries are RIAs, and as such are supervised by the SEC. They are also subject to various U.S. federal and state laws and regulations and to the laws and regulations of any countries in which they conduct business. Our subsidiaries advise both RICs, including the BNY Mellon Family of Funds and BNY Mellon ETF Funds, and private investment companies which are not registered under the 1940 Act.

Certain of our investment management, trust and custody operations provide services to employee benefit plans that are subject to the Employee Retirement Income Security Act of 1974, as amended ("ERISA"), administered by the U.S. Department of Labor. ERISA imposes certain statutory duties, liabilities, disclosure obligations and restrictions on fiduciaries, as applicable, related to the services being performed and fees being paid.

SEC Regulation Best Interest ("Reg BI") requires a broker-dealer to act in the "best interest" of a retail customer when making a recommendation of any securities transaction or investment strategy to any such customer. The Form CRS Relationship Summary ("Form CRS") requires registered investment advisers and broker-dealers to provide retail investors with a brief summary about the nature of their relationship with their investment professional and supplements other more detailed disclosures.

On Feb. 9, 2022, the SEC proposed rule amendments to shorten the standard settlement cycle for certain broker-dealer securities transactions to T+1. The proposal included additional amendments designed to accelerate the confirmation of such trades. The SEC adopted a final rule on Feb. 15, 2023. We are assessing the potential impacts of the final rule.

On Dec. 14, 2022, the SEC proposed four rulemakings related to market structure, including a proposed Regulation Best Execution, which would establish a best execution regulatory framework for broker-dealers, and proposals regarding order competition and disclosure of order execution information. We are assessing the potential impacts of the proposals.

On Feb. 15, 2023, the SEC proposed amendments to the custody rule under the Investment Advisers Act of 1940, which generally requires registered investment advisers having custody of client funds or securities to maintain client funds or securities with a qualified custodian. The proposal would expand the types of investments covered by the custody rule to include any client "assets." It would also require registered investment advisers to enter into a written agreement with, and obtain reasonable assurances from, the qualified custodian that the custodian will comply with protections in the proposed rule, including with respect to indemnification of the client, responsibility for subcustodians and central securities depositaries, asset segregation, and no liens. In addition, the SEC proposed amendments to the investment adviser recordkeeping rule to require advisers to keep additional, more detailed records. We are evaluating the potential impact of the proposals.

Exchange-Traded Funds Rule

SEC Rule 6c-11 (the "ETF Rule") under the 1940 Act permits ETFs that satisfy certain conditions to organize and operate without first obtaining an exemptive order from the SEC and requires an ETF to make certain disclosures, including historical data on an ETF's premiums, discounts and bid-ask spread information, as well as the ETF's daily portfolio holdings. The ETF Rule also requires ETFs using custom baskets to put written policies and procedures in place establishing that the custom baskets are in the best interests of the ETF and its shareholders. Pursuant to the ETF Rule, BNY Mellon has launched a number of ETFs.

Post-Brexit UK Regulatory Framework

The UK left the EU on Jan. 31, 2020, and the transition period ended on Dec. 31, 2020 ("Brexit Transition Period"). Existing EU regulations that were in force and applicable in the UK on Dec. 31, 2020, were "on-shored" into the UK regulatory framework (and adapted as appropriate for the UK context) as "retained EU law." EU rules and regulations that came into effect on or after Jan. 1, 2021, do not apply to financial activities within the UK. The UK and EU financial services regulatory frameworks have started diverging from each other after the conclusion of the Brexit Transition Period.

Under the EU-UK Trade and Cooperation Agreement ("EU-UK Agreement"), which became fully effective in April 2021, the EU and UK have agreed to make

their best endeavors to ensure that internationally agreed standards in the financial services sector for regulation and supervision are implemented and applied in their territory and establish a framework for structured regulatory cooperation on financial services.

The Financial Services Act 2021 made several changes to the UK financial services regulatory framework, including the prudential frameworks for credit institutions and investment firms. In particular, the Financial Services Act 2021 grants substantial prudential rulemaking powers to the Prudential Regulatory Authority ("PRA") with respect to UK credit institutions, and the Financial Conduct Authority ("FCA") with respect to UK investment firms. The UK's version of the EU Capital Requirements Regulation ("UK CRR2") for credit institutions and the UK Investment Firms Prudential Regime ("UK IFPR") came into effect on Jan. 1, 2022. For more information regarding the UK IFPR, see "Investment Firms Directive and Investment Firms Regulation" below.

We maintain a presence in the UK through the London branch of The Bank of New York Mellon, The Bank of New York Mellon (International) Limited, a credit institution incorporated and authorized in the UK, and a number of our investment firms. We maintain a presence in the EU through the Frankfurt branch of The Bank of New York Mellon, BNY Mellon SA/NV, which is headquartered in Belgium and has a branch network in a number of other EU countries, and through certain of our investment firms. BNY Mellon SA/NV has a general banking license for the provision of banking and investment services.

Operations and Regulations Outside the U.S.

In Europe, branches of The Bank of New York Mellon are subject to regulation in the countries in which they are established, in addition to being subject to oversight by the U.S. regulators referred to above. BNY Mellon SA/NV is a public limited liability company incorporated under the laws of Belgium, holds a banking license issued by the National Bank of Belgium and is authorized to carry out all banking and savings activities as a credit institution. The European Central Bank (the "ECB") has responsibility for the direct supervision of significant banks and banking groups in the Euro area, including BNY Mellon SA/NV. The ECB's supervision is carried out in conjunction with the relevant national prudential regulator (the National Bank of Belgium in BNY Mellon SA/NV's case), as part of the Single Supervisory Mechanism. BNY Mellon SA/NV conducts its activities in Belgium as well as through its branch offices in Denmark, France, Germany, UK, Ireland, Italy, Luxembourg, the Netherlands and Spain.

Certain of our financial services operations in the UK are subject to regulation and supervision by the FCA and the PRA. The PRA is responsible for the authorization and prudential regulation of firms that carry on PRA-regulated activities, including banks. PRA-authorized firms are also subject to regulation by the FCA for conduct purposes. In contrast, FCA-authorized firms (such as investment management firms) have the FCA as their sole regulator for both prudential and conduct purposes. As a result, FCA-authorized firms must comply with FCA prudential and conduct rules and the FCA's Principles for Businesses, while dual-regulated firms must comply with the FCA conduct rules and FCA Principles, as well as the applicable PRA prudential rules and the PRA's Principles for Businesses.

The PRA regulates The Bank of New York Mellon (International) Limited, our UK-incorporated bank, as well as the London branch of The Bank of New York Mellon. Certain of BNY Mellon's UK-incorporated subsidiaries are authorized to conduct investment business in the UK. Their investment management advisory activities and their sale and marketing of retail investment products are regulated by the FCA. Certain UK investment funds, including investment funds of BNY Mellon, are registered with the FCA and are offered for sale to retail investors in the UK.

The types of activities in which the foreign branches of our banking subsidiaries and our international subsidiaries may engage are subject to various restrictions imposed by the Federal Reserve. Those foreign branches and international subsidiaries are also subject to the laws and regulatory authorities of the countries in which they operate and, in the case of banking subsidiaries, may be subject to regulatory capital requirements in the jurisdictions in which they operate.

The primary prudential framework in the EU is provided by the Capital Requirements Directive 5 ("CRD5") and the Capital Requirements Regulation 2 ("CRR2"), both of which implement many elements of the Basel III framework.

Among other things, CRD5 includes a requirement for certain non-EU banking groups with more than €40 billion of assets in the EU to establish a single "EU intermediate parent undertaking" ("EU IPU") to serve as an EU holding company for all EU credit institutions and certain EU investment firms in the group. Following review, BNY Mellon is currently not required to establish an EU IPU structure on the basis of its existing legal entity structure and operations.

CRR2 includes provisions relating to the leverage ratio, NSFR, MREL (including closer alignment to the final FSB TLAC standard), a revised Basel market risk framework, counterparty credit risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures and reporting/disclosure requirements.

The lines of business included in our Securities Services, Market and Wealth Services and Investment and Wealth Management business segments are subject to significant regulation in numerous jurisdictions around the world relating to, among other things, the safeguarding, administration and management of client assets and client funds.

Various existing and/or proposed EU directives and regulations have or will have a significant impact on the provision of many of our products and services, including the revised Markets in Financial Instruments Directive II and Markets in Financial Instruments Regulation (collectively, "MiFID II"), the Alternative Investment Fund Managers Directive ("AIFMD"), the Directive on Undertakings for Collective Investment in Transferable Securities ("UCITS V"), the Central Securities Depositories Regulation, the revised regulation on OTC derivatives, central counterparties and trade repositories (commonly known as "EMIR"), the Payment Services Directive II and the Benchmarks Regulation. These EU directives and regulations may impact our operations and risk profile but may also provide new opportunities for the provision of BNY Mellon products and services. Some of these EU directives and regulations are subject to review, and the outcome of these reviews is not yet certain.

Investment Firms Directive and Investment Firms Regulation

In the EU, the Investment Firms Directive/Investment Firms Regulation ("IFD/IFR"), previously referred to as the "new prudential regime for investment firms," is a more tailored, proportionate prudential regime for investment firms. BNY Mellon has several UK-domiciled investment firms that are subject to UK IFPR.

The main change under both IFD/IFR and UK IFPR is that capital requirements for most investment firms are no longer based on Basel standards for banks such as credit risk, market risk or operational risk. Instead, the capital requirements are based on factors that are more tailored to the risks that investment firms face.

European Financial Markets and Market Infrastructure

The EU continues to develop proposals and regulations in relation to financial markets and market infrastructures. MiFID II applies to financial institutions conducting business in the EEA and has required significant changes to comply with relevant regulatory requirements, including extensive transaction reporting and market transparency obligations and a heightened focus on how financial institutions conduct business with and disclose information to their clients. A set of revisions to EU MiFID II rules (the so-called quick fix) came into effect on Feb. 28, 2022 and include changes to cost and charges disclosures and means of client communication. In the UK, a similar set of revisions became effective in July 2021 for most of the amended rules.

Funds Regulation in Europe

The AIFMD has a direct effect on our alternative fund manager clients and our depository business and other products offered across Europe as well as upon our Investment Management business. AIFMD imposes heightened obligations upon depositories, which have operational effects.

Our businesses servicing regulated funds in Europe and our Investment Management businesses in Europe are also affected by the revised directive governing UCITS V.

Under the regulations for depositary safekeeping duties under AIFMD and UCITS V, the Commission recognizes the use of omnibus account structures when accounting for assets in a chain of custody, but requires that depositaries and trustees, such as BNY Mellon, maintain their own books and records.

Replacement of Interbank Offered Rates ("IBORs"), including LIBOR

The UK Financial Conduct Authority (the "FCA") and the administrator for LIBOR have announced that the publication of the most commonly used U.S. dollar LIBOR settings will cease to be published or cease to be representative after June 30, 2023. The publication of all other LIBOR settings ceased to be published or to be representative as of Dec. 31, 2021. In addition, the U.S. bank regulators had also issued guidance strongly encouraging banking organizations to cease using U.S. dollar LIBOR as a reference rate in new contracts by Dec. 31, 2021. As a result, financial market participants have begun to transition away from LIBOR and other IBORs to alternative reference rates. The transition event on Dec. 31, 2021 had minimal impact across BNY Mellon's businesses, however the remaining U.S. dollar LIBOR transition will impact assets and liabilities on our balance sheet that reference IBORs, investments that we manage linked to IBORs in our Investment Management business and the operational servicing of products that reference IBORs in our Market and Wealth Services and Securities Services business segments.

In March 2022, the Adjustable Interest Rate (LIBOR) Act (the "LIBOR Act") was enacted. The LIBOR Act provides a statutory framework to replace U.S. dollar LIBOR with a benchmark rate based on the Secured Overnight Financing Rate ("SOFR") for contracts governed by U.S. law that have no fallbacks or fallbacks that would require the use of a poll or LIBOR-based rate. In December 2022, the Federal Reserve adopted final rules to identify the SOFR-based replacement rate and conforming changes for legacy LIBOR-linked contracts.

We are working to facilitate an orderly transition from IBORs to alternative reference rates for us and our clients. Accordingly, we have created a global transition program with senior management oversight that focuses on, among other things, evaluating and monitoring the impacts of the discontinuance of reference IBORs and the transition to replacement benchmarks on our business operations and financial condition; identifying and evaluating the scope of impacted financial instruments and contracts and the attendant risks; and implementing technology systems, models and analytics to support the transition. In addition, we continue to actively engage with our regulators and clients and participate in central bank and sector working groups.

Despite the proximity of the June 30, 2023 cessation date, there remain, however, a number of unknown factors regarding the transition from the IBORs and/or interest rate benchmark reforms that could impact our business. For a further discussion of the various risks, see "Risk Factors – Market Risk – Transitions away from and the replacement of LIBOR and other IBORs could adversely impact our business, financial condition and results of operations."

An investment in securities issued by us involves certain risks that you should carefully consider. The following discussion sets forth the most material risk factors that could affect our business, financial condition or results of operations. Some of these risks are interrelated and the occurrence of one may exacerbate the effect of others. Additionally, factors other than those discussed below or in our other reports filed with or furnished to the SEC could also adversely affect our business, financial condition or results of operations. We cannot assure you that the risk factors described below or elsewhere in our reports address all potential risks that we may face. These risk factors also serve to describe considerations which may cause our results to differ materially from those described in forward-looking statements included herein or in other documents or statements that make reference to this Annual Report. See "Forward-looking Statements."

Summary

Our business, financial condition and results of operations may be materially and adversely affected by various risk types and considerations, including operational risk, market risk, credit risk, capital and liquidity risk, strategic risk and additional risks, including as a result of the following:

Operational Risk

- Errors or delays in our operational and transaction processing, or those of third parties.
- Our risk management framework, models and processes may not be effective in identifying or mitigating risk and reducing the potential for losses.
- Failure to attract, retain, develop and motivate employees.
- A communications or technology disruption or failure within our infrastructure or the infrastructure of third parties that results in a loss of information, delays our ability to access information or impacts our ability to provide services to our clients.
- A cybersecurity incident, or a failure in our computer systems, networks and information, or those of third parties, could result in the theft, loss, unauthorized access to, disclosure, use or alteration of information, system or network failures, or loss of access to information.
- We are subject to extensive government rulemaking, policies, regulation and supervision that impact our operations. Changes to and introduction of new rules and regulations have compelled, and in the future may compel, us to change how we manage our businesses.
- Regulatory or enforcement actions or litigation.
- A failure or circumvention of our controls and procedures.

Market Risk

- We are dependent on fee-based business for a substantial majority of our revenue and our fee-based revenues could be adversely affected by slowing in market activity, weak financial markets, underperformance and/or negative trends in savings rates or in investment preferences.
- Weakness and volatility in financial markets and the economy generally.
- Levels of and changes in interest rates have impacted, and will in the future continue to impact, our profitability and capital levels, at times adversely.
- We have experienced, and may continue to experience, unrealized or realized losses on securities related to volatile and illiquid market conditions, reducing our capital levels and/or earnings.
- Transitions away from and the replacement of LIBOR and other IBORs.

Credit Risk

- The failure or perceived weakness of any of our significant clients or counterparties, many of whom are major financial institutions or sovereign entities, and our assumption of credit, counterparty and concentration risk, could expose us to loss.
- We could incur losses if our allowance for credit losses, including loan and lending-related commitment reserves, is inadequate or if our

expectations of future economic conditions deteriorate.

Capital and Liquidity Risk

- Failure to effectively manage our liquidity.
- Failure to satisfy regulatory standards, including "well capitalized" and "well managed" status or capital adequacy and liquidity rules more generally.
- The Parent is a non-operating holding company and, as a result, is dependent on dividends from its subsidiaries and extensions of credit from its IHC to meet its obligations, including with respect to its securities, and to provide funds for share repurchases and payment of dividends to its stockholders.
- Our ability to return capital to shareholders is subject to the discretion of our Board of Directors and may be limited by U.S. banking laws and regulations, including those governing capital and capital planning, applicable provisions of Delaware law and our failure to pay full and timely dividends on our preferred stock.
- Any material reduction in our credit ratings or the credit ratings of our principal bank subsidiaries, The Bank of New York Mellon or BNY Mellon, N.A., could increase the cost of funding and borrowing to us and our rated subsidiaries.
- The application of our Title I preferred resolution strategy or resolution under the Title II orderly liquidation authority could adversely affect the Parent's liquidity and financial condition and the Parent's security holders.

Strategic Risk

- New lines of business, new products and services or transformational or strategic project initiatives subject us to new or additional risks, and the failure to implement these initiatives.
- We are subject to competition in all aspects of our business, which could negatively affect our ability to maintain or increase our profitability.
- Our strategic transactions present risks and uncertainties.

Additional Risks

- Adverse events, publicity, government scrutiny or other reputational harm.
- Climate change concerns could adversely affect our business, affect client activity levels and damage our reputation.
- Impacts from natural disasters, climate change, acts of terrorism, pandemics, global conflicts and other geopolitical events.
- Tax law changes or challenges to our tax positions with respect to historical transactions may adversely affect our net income and effective tax rate.
- Changes in accounting standards governing the preparation of our financial statements and future events could have a material impact on our reported financial condition, results of operations, cash flows and other financial data.

Operational Risk

Errors or delays in our operational and transaction processing, or those of third parties, may materially adversely affect our business, financial condition, results of operations and reputation.

We are required to accurately process large numbers of transactions each day on a timely basis. The transactions we process or execute are operationally complex and can involve numerous parties, jurisdictions, regulations and systems, and, therefore, are subject to execution and processing errors and failures. In situations reliant upon manual processes, the risk of execution and processing errors and failures is heightened. Manual processes are inherently more prone to human and other processing error, malfeasance, fraud and other misconduct than automated processes. With more complex and voluminous transactions at ever increasing speeds, which present an increased risk of error or significant operational delay, we must continuously evolve our processes, controls, systems and workforce in a manner designed to achieve accurate and timely execution of these transactions. When errors or delays do occur, they may be difficult to detect and remediate in a timely manner. The use of automation, artificial intelligence and other emerging technologies in connection with automated processes may amplify the impact of any such error or delay, as the failure to

timely discover and respond to an operational error relating to an automated process can have dramatic consequences in light of the speed and volume of transactions involved. Furthermore, the risks resulting from an operational error may be heightened with respect to certain asset classes, such as some digital assets, with respect to which it may be impossible to retrieve wrongfully or erroneously transferred digital assets.

Operational errors or significant operational delays could have a material and negative impact on our ability to conduct our business or service our clients, which could adversely affect our results due to potentially higher expenses and lower revenues, lower our capital ratios, create liability for us or our clients or negatively impact our reputation. We also recognize that service reliability and systems resilience are essential components to processing transactions and safeguarding financial assets, and an operational error impacting a large number of transactions could have unfavorable ripple effects in the financial markets, which could exacerbate the adverse effects of the error on us.

Affiliates or third parties with which we do business or that facilitate our business activities could also be sources of execution and processing errors, failures or significant operational delays. In certain jurisdictions, we may be deemed to be statutorily or criminally liable for operational errors, fraud, breakdowns or delays by these affiliates or third parties. Additionally, as a result of regulations, including the Alternative Investment Fund Managers Directive and the Undertakings for Collective Investment in Transferable Securities V, when we act as depositary in the European Economic Area, we could be exposed to restitution risk for, among other things, errors or fraud perpetrated by a sub-custodian resulting in a loss or delay in return of client's securities. When we are not acting as a European Economic Area depositary, but where we provide custody services to a European Economic Area depositary, we may accept similar liabilities to that of a European Economic Area depositary as a matter of contract.

Our risk management framework, models and processes may not be effective in identifying or mitigating risk and reducing the potential for losses.

Our risk management framework seeks to identify and mitigate risk and loss to us. We have established comprehensive policies and procedures and an internal control framework designed to provide a sound operational environment for the types of risk to which we are subject, including operational risk, credit risk, market risk, liquidity risk, model risk and strategic risk. We have also established frameworks to mitigate risk and loss to us as a result of the actions of affiliates or third parties with which we do business or that facilitate our business activities. However, as with any risk management framework, there are inherent limitations to our current and future risk management strategies, including risks that we may not have appropriately anticipated or identified.

Our regulators remain focused on ensuring that financial institutions build and maintain robust risk management policies. Regulators' views of the quality of our risk models and framework affect our regulators' evaluations of us, and we are exposed to the risk of adverse regulatory and supervisory developments, including enforcement actions and increased costs in connection with remediation efforts, if our regulators view our risk models and framework to be insufficient or if remediation is not completed in a timely manner. Accurate and timely enterprise-wide risk information is necessary to enhance management's decision-making in times of crisis. If our risk management framework or governance structure proves ineffective or if our enterprise-wide management information is incomplete or inaccurate, we could suffer unexpected losses, which could materially adversely affect our results of operations or financial condition.

In certain instances, we rely on models to measure, monitor and predict risks. However, these models are inherently limited because they involve techniques, including the use of historical data, trends, assumptions and judgments that cannot anticipate every economic and financial outcome in the markets in which we operate, nor can they anticipate the specifics and timing of such outcomes, especially during severe market downturns or stress events, such as those experienced in March 2020 and other times during the COVID-19 pandemic. These models may not appropriately capture all relevant risks or accurately predict future events or exposures. The risk of the unsuccessful development or implementation of our models, systems or processes, as well as risk associated with oversight, monitoring and application of models, cannot be completely eliminated. We may experience unexpected losses if our models, estimates or judgments used or applied in

connection with our risk management activities or in the preparation of our financial statements prove to have been inadequate or incorrect. All models have some degree of inaccuracy, which can be further exacerbated when environmental conditions or stress conditions push theory beyond its limits. The models that we use to assess and control our market risk exposures also reflect assumptions about the degree of correlation among prices of various asset classes or other market indicators. The 2008 financial crisis and resulting regulatory reform highlighted both the importance and some of the limitations of managing unanticipated risks. In times of market stress or other unforeseen circumstances, previously uncorrelated indicators may become correlated, or previously correlated indicators may move in different directions. These types of market movements have at times limited the effectiveness of our hedging strategies and have caused us to incur significant losses, and they may do so in the future.

In addition, our businesses and the markets in which we operate are continuously evolving. We may fail to fully understand the implications of changes in our businesses or the financial markets or fail to adequately or timely enhance our risk framework to address those changes. If our risk framework is ineffective because it fails to keep pace with changes in the financial markets, regulatory requirements, our businesses, our counterparties, clients or service providers or for other reasons, we could incur losses, suffer reputational damage, face significant remediation expenses or find ourselves out of compliance with applicable regulatory or contractual mandates or supervisory expectations.

An important aspect of our risk management framework is creating a risk culture that is sustainable and appropriate to our role as a major financial institution in which all employees fully understand that there is risk in every aspect of our business and the importance of managing risk as it relates to their job functions. If we fail to create the appropriate environment that sensitizes all of our employees to managing risk, our business could be adversely impacted. For more information on how we monitor and manage our risk management framework, see “Risk Management – Overview.”

Our business may be adversely affected if we are unable to attract, retain, develop and motivate employees.

Our success depends, in large part, on our ability to attract new employees, retain, develop and motivate our existing employees, have a diverse and inclusive workplace and continue to compensate our employees competitively amid heightened regulatory restrictions and an inflationary environment. Competition for the most skilled employees in most activities in which we engage can be intense, and we may not be able to recruit and retain key personnel. In addition, third-party suppliers and service providers on which we rely may face challenges in attracting and retaining their employees, which may have a negative impact on our operations and our resiliency capabilities.

We rely on certain employees with subject matter expertise to assist in the implementation of important initiatives and to support the development of new products and services, including in connection with our digital assets initiatives. As focus on technology and risk management increases in the financial industry, competition for technologists and risk personnel has intensified, which could constrain our ability to execute on certain of our strategic initiatives.

Our ability to attract, retain and motivate key executives and other employees may be negatively affected by continuous changes to immigration policies and restrictions applicable to incentive and other compensation programs, including deferral, clawback requirements and other limits on incentive compensation. Some of these restrictions may not apply to some of our competitors and to other institutions with which we compete for talent, in particular as we are more often competing for personnel with financial technology providers and other entities that may not be publicly traded or regulated banking organizations and, in either case, may not have the same limitations on compensation as we do.

The loss of employees’ skills, knowledge of the market, industry experience, and the cost of finding replacements, particularly in a protracted inflationary environment with a competitive labor market, have led, and we expect will continue to lead, to an increase in labor costs and hurt our business. In addition, our current or future approach to in-office and remote-work arrangements may not meet the

needs or expectations of our current or prospective employees, may not be perceived as favorable as compared to the arrangements offered by competitors and may not be conducive to a collaborative working environment, which could adversely affect our ability to attract, retain, develop and motivate employees. If we are unable to continue to attract, retain, develop and motivate highly qualified employees, our performance, including our competitive position, could be adversely affected.

A communications or technology disruption or failure within our infrastructure or the infrastructure of third parties that results in a loss of information, delays our ability to access information or impacts our ability to provide services to our clients may materially adversely affect our business, financial condition and results of operations.

We use communications and information systems to conduct our business. Our businesses are highly dependent on our ability to process large volumes of data that require global capabilities and scale from our technology platforms. If our technology or communications fail, or those of industry utilities or our service providers fail, we have in the past experienced, and could in the future experience, production and system outages or failures, or other significant operational delays. Any such outage, failure or delay could adversely affect our ability to effect transactions or service our clients, which could expose us to liability for damages, result in the loss of business, damage our reputation, subject us to regulatory scrutiny or sanctions or expose us to litigation, any of which could have a material adverse effect on our business, financial condition and results of operations. The continued prevalence of remote work arrangements has increased our reliance on remote access systems and video conferencing services, and, as a result, we are exposed to similar risks if the technology and communications systems our employees or employees of third parties use while working remotely fail. Security or technology disruptions, failures or delays that impact our communications or information systems could also adversely affect our ability to manage our exposure to risk or expand our business. These incidents are unpredictable and can arise from numerous sources, not all of which are in our control, including, among others, human error, malfeasance and other misconduct, as well as operational disruptions at third parties.

Upgrading our computer systems, software and networks subjects us to the risk of disruptions, failures or delays due to the complexity and interconnectedness of our computer systems, software and networks. The failure to properly upgrade or maintain these computer systems, software and networks could result in greater susceptibility to cyberattacks, particularly in light of the greater frequency and severity of cyberattacks in recent years, as well as the growing prevalence of cyberattacks affecting third-party software and information service providers. Additionally, cloud technologies are becoming increasingly critical to the operation of our systems and platforms, and, as our reliance on this technology continues to grow, we will continue to be increasingly subject to evolving risks relating to the use of cloud technologies. Our new product initiatives, including in connection with digital asset services, may further expose us to new evolving technology risks and may lead to dependencies on, and compatibility issues with, decentralized or third-party blockchains and their protocols, which we do not control. Although we have programs and processes to identify such risks, there can be no assurance that any such disruptions, failures or delays will not occur or, if they do occur, that actions taken to mitigate their impact will be timely or adequate. Although we maintain insurance covering certain technology infrastructure losses, there can be no assurance that liabilities or losses we may incur will be covered under such policies or that the amount of insurance will be adequate.

We continue to evaluate and strengthen our business continuity and operational resiliency capabilities and have increased our investments in technology to steadily enhance those capabilities, including our ability to resume and sustain our operations. There can be no guarantee, however, that a technology outage will not occur, including as a result of failures related to upgrades and maintenance, or that our business continuity and operational resiliency capabilities will enable us to maintain our operations and appropriately respond to events. For a discussion of operational risk, see “Risk Management – Risk Types Overview – Operational Risk.”

Third parties with which we do business or that facilitate our business activities, including exchanges, clearing houses, financial intermediaries or vendors that provide services or security solutions for our operations, could also be sources of technology risk to us, including from breakdowns, capacity

constraints, attacks (including cyberattacks targeted at third-party service providers), failures or delays of their own systems or other services that impair our ability to process transactions and communicate with customers and counterparties. This risk may be intensified to the extent that there is concentration in a single unique product or service provided by a single vendor, or to the extent we rely on service providers from a single geographic area. In addition, we are exposed to the risk that a technology disruption or other information security event at a vendor common to our third-party service providers could impede their ability to provide products or services to us. We may not be able to effectively monitor or mitigate operational risks relating to the use of common vendors by third-party service providers, which could result in potential liability to clients and customers, regulatory fines, penalties or other sanctions, increased operational costs or harm to our reputation.

As our business areas evolve, whether due to the introduction of technology, new service offering requirements for our clients, or changes in regulation relative to these service offerings, unforeseen risks materially impacting our business operations could arise. The technology used could become increasingly complex and rely on the continued effectiveness of the programming code and integrity of the inputted data. Rapid technological changes and competitive pressures require us to make significant and ongoing investments in technology not only to develop competitive new products and services or adopt new technologies, but to sustain our current businesses. Our financial performance depends in part on our ability to develop and market these new products and services in a timely manner at a competitive price and adopt or develop new technologies that differentiate our products or provide cost efficiencies. The failure to adequately review and consider critical business changes prior to and during introduction and deployment of key technological systems or the failure to adequately align operational capabilities with evolving client commitments and expectations, subjects us to the risk of an adverse impact on our ability to service and retain customers and on our operations. The costs we incur in enhancing our technology could be substantial and may not ultimately improve our competitiveness or profitability.

As a result of financial entities, central agents, clearing agents and houses, exchanges and technology systems across the globe becoming more interdependent and complex, a technology failure that significantly degrades, deletes or compromises the systems or data of one or more financial entities or suppliers could have a material impact on counterparties or other market participants, including us. A disruptive event or, failure or delay experienced by one institution could disrupt the functioning of the overall financial system.

A cybersecurity incident, or a failure in our computer systems, networks and information, or those of third parties, could result in the theft, loss, unauthorized access to, disclosure, use or alteration of information, system or network failures, or loss of access to information. Any such incident or failure could adversely impact our ability to conduct our businesses, damage our reputation and cause losses.

We have been, and we expect to continue to be, the target of attempted cyberattacks, computer viruses or other malicious software, denial of service efforts, phishing attacks and other information security threats, including unauthorized access attempts and cyberattacks targeted at third-party service providers. The continued reliance on remote working arrangements, as well as our employees' corresponding usage of mobile and cloud technologies, subjects us to a number of cyber risks, including attempted cyberattacks targeting remote workers, as well as mobile and cloud technologies. Although we deploy a broad range of sophisticated defenses, we could suffer a material adverse impact or disruption as a result of a cybersecurity incident.

Cybersecurity incidents may occur through intentional or unintentional acts by individuals or groups having authorized or unauthorized access to our systems or our clients' or counterparties' information, which may include confidential or proprietary information. These individuals or groups may include employees, vendors and customers, as well as others with malicious intent. Malicious actors may also attempt to place individuals within BNY Mellon or fraudulently induce employees, vendors, customers or other users of our systems to disclose sensitive information in order to gain access to our data or that of our clients. A cybersecurity incident that results in the theft, loss, unauthorized access to, disclosure, use or alteration of information, system or network failures, or loss of access to information, may require us to reconstruct lost data (which may not be possible), reimburse clients for data and credit

monitoring services, or result in loss of customer business or damage to our computers or systems and those of our customers and counterparties. A cybersecurity incident could also result in the loss of customer digital assets, including custodied digital assets, which may be distinctly difficult to recover and could subject us to customer disputes, claims for reimbursement, losses, negative publicity, reputational damage and governmental and regulatory scrutiny, investigations and enforcement actions. These impacts could be costly and time-consuming and could materially adversely affect our business, financial condition and results of operations.

While we seek to mitigate these risks to ensure the integrity of our systems and information and continuously evolve our cybersecurity capabilities, it is possible that we may not anticipate or implement effective preventive measures against all cybersecurity threats, or detect all such threats, especially because the techniques used change frequently or are not recognized until after they are launched. Moreover, attacks can originate from a wide variety of sources, including malicious actors who are involved with organized crime or who may be linked to terrorist organizations or hostile foreign governments, or from cross-contamination of legitimate parties (including vendors, clients, financial market utilities, and other financial institutions). Risks relating to attacks on our vendors, including supply chain attacks affecting our software and information technology service providers, have been rising as such attacks become increasingly frequent and severe and as financial entities and technology systems have become increasingly consolidated, interdependent and complex.

The failure to maintain an adequate technology infrastructure and applications with effective cybersecurity controls relative to the type, size and complexity of operations, markets and products traded, access to trading venues and our market interconnectedness could impact operations and impede our productivity and growth, which could cause our earnings to decline or could 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. Despite our capabilities for identifying and attempting to mitigate the impact of cyberattacks, a successful cyberattack could occur and persist for an extended period of time before being detected. In addition, because any investigation of a cybersecurity incident would be inherently unpredictable, the extent of a particular cybersecurity incident and the path of investigating the incident may not be immediately clear. It may take a significant amount of time before such an investigation can be completed and reliable information about the incident is known. While such an investigation is ongoing, we may not necessarily know the extent of the harm or how best to remediate it, certain errors or actions could be repeated or compounded before they are discovered and remediated, and communication to the public, clients, regulators, and other stakeholders may not be sufficiently timely or accurate, any or all of which could further increase the costs and consequences of a cybersecurity incident. Moreover, potential new regulations may require us to publicly disclose information about a cybersecurity event before the incident has been resolved or fully investigated.

In addition, we rely on a variety of measures to protect our intellectual property and proprietary information, including copyrights, trademarks, patents and controls on access and distribution. These measures may not prevent misappropriation or infringement of our intellectual property or proprietary information and a resulting loss of competitive advantage. Furthermore, if a third party were to assert a claim of infringement or misappropriation of its proprietary rights, obtained through patents or otherwise, against us, we could be required to spend a significant amount of resources to defend such claims, develop alternative methods of operations, pay substantial money damages, obtain a license from the third party or possibly stop providing one or more products or services. In addition, we conduct business in various jurisdictions that may not have comparable levels of protection for intellectual property and proprietary information as the U.S. The protection afforded in those jurisdictions may be less established and/or predictable. As a result, there may also be heightened risks associated with the potential theft of data, proprietary information, technology and intellectual property in those jurisdictions by domestic or foreign actors, including private parties and those affiliated with or controlled by state actors. Any theft of data, proprietary information, technology or intellectual property may negatively impact our operations and reputation, including disrupting our business activities in those jurisdictions.

We are also subject to laws and regulations relating to the protection and privacy of the information of clients, employees and others, and any failure to comply with these laws and regulations could expose us to liability, increased regulatory oversight and/or reputational damage.

We are subject to extensive government rulemaking, policies, regulation and supervision that impact our operations. Changes to and introduction of new rules and regulations have compelled, and in the future may compel, us to change how we manage our businesses, which could have a material adverse effect on our business, financial condition and results of operations.

As a large, internationally active financial services company, we operate in a highly regulated environment, and are subject to a comprehensive statutory and regulatory regime affecting all aspects of our business and operations, including oversight by governmental agencies both inside and outside the U.S. Regulations and related regulatory guidance and supervisory oversight impact how we analyze certain business opportunities, our regulatory capital and liquidity requirements, the revenue profile of certain of our core activities, the products and services we provide, how we monitor and manage operational risk and how we promote a sound governance and control environment. Any changes to the regulatory frameworks and environment in which we operate and the significant management attention and resources necessary to address those changes could materially adversely affect our business, financial condition and results of operations and have other negative consequences. Although these risks apply to our businesses generally, at the present time they are particularly relevant for our digital asset activities and the evolving expectations associated with ESG matters. This reflects the pace of developments relating to digital assets and ESG regulation, including the increased focus by regulators and other governmental authorities on these topics and the relatively uncertain, distinct and novel nature of the associated principles.

The evolving regulatory environment and uncertainty about the timing and scope of future regulations may contribute to decisions we may make to suspend, reduce or withdraw from existing businesses, activities or initiatives, which may result in potential lost revenue or significant restructuring or related costs or exposures. We also face the risk of becoming subject to new or more stringent requirements in connection with the introduction of new regulations or modification of existing regulations, which could require us to hold more capital or liquidity or have other adverse effects on our businesses or profitability. In addition, regulatory responses in connection with severe market downturns or unforeseen stress events may alter or disrupt our planned future strategies and actions.

The monetary, tax and other policies of various governments, agencies and regulatory authorities both in the U.S. and globally have a significant impact on interest rates, currencies, commodity pricing (including oil), the imposition of tariffs or other limitations on international trade and travel, and overall financial market performance, which can impact our business, results of operations and capital. Changes in these policies are beyond our control and can be difficult to predict and we cannot determine the ultimate effect that any such changes would have upon our business, financial condition or results of operations. Legal or regulatory changes affecting access to financial markets can also adversely affect us. For example, under the Holding Foreign Companies Accountable Act, the SEC must prohibit trading in the securities of companies identified by the SEC for three consecutive years as having retained an auditor located in a foreign jurisdiction that the Public Company Accounting Oversight Board ("PCAOB") has determined it is unable to inspect or investigate completely. In December 2022, the PCAOB vacated an earlier determination with respect to mainland China and Hong Kong. However, the PCAOB has indicated it expects to continue to have complete access going forward and will consider the need to issue a new determination if needed. As a result of this legislation, companies located in mainland China, Hong Kong or potentially other jurisdictions may decide, or eventually be required, to delist or otherwise remove their securities from U.S. financial markets, which would adversely affect our businesses, particularly our Issuer Services line of business.

The regulatory and supervisory focus of U.S. banking agencies is primarily intended to protect the safety and soundness of the banking system and federally insured deposits, and not to protect investors in our securities. Regulatory and supervisory standards and expectations across jurisdictions may be divergent and otherwise may not conform and/or may be applied in a manner that is not harmonized within a

jurisdiction (in relation to national versus non-national financial services providers) and/or across jurisdictions. Additionally, banking regulators have wide supervisory discretion in the ongoing examination and enforcement of applicable banking statutes, regulations, and guidelines, and may restrict our ability to engage in certain activities or acquisitions or may require us to limit our capital distributions, maintain more capital or hold more highly liquid assets.

The U.S. capital rules subject us and our U.S. banking subsidiaries to stringent capital requirements, which could restrict growth, activities or operations, trigger divestiture of assets or operations or limit our ability to return capital to shareholders.

The LCR and NSFR require us to maintain significant holdings of high-quality and generally lower-yielding liquid assets. In calculating the LCR and NSFR, we must also determine which deposits should be considered stable deposits. Stable deposits must meet a series of requirements and typically receive favorable treatment under the LCR and NSFR. We use qualitative and quantitative analysis to identify core stable deposits. It is possible that our LCR and NSFR could fall below applicable regulatory requirements as a consequence of the inherent uncertainties associated with this analysis (including as a result of regulatory changes or additional guidance from our regulators). In addition to facing potential regulatory consequences (which could be significant), we may be required to remedy this shortfall by liquidating assets in our investment portfolio or raising additional debt, each of which could have a material negative impact on our net interest revenue.

We develop and submit plans for our rapid and orderly resolution in the event of material financial distress or failure to the Federal Reserve and the FDIC. If the agencies determine that our future submissions are not credible or would not facilitate an orderly resolution under the U.S. Bankruptcy Code, and we fail to address any such deficiencies in a timely manner, we may be subject to more stringent capital or liquidity requirements or restrictions on our growth, activities or operations, or may be required to divest assets or operations, which could adversely affect our business, financial condition and results of operations.

Our global activities are also subject to extensive regulation by various non-U.S. regulators, including governments, securities exchanges, central banks and other regulatory bodies in the jurisdictions in which we operate, relating to, among other things, the safeguarding, administration and management of client assets and client funds, regulation of markets, recovery and resolution planning and payments and financial market infrastructure.

Various laws, regulations, rules and directives effective in the jurisdictions in which we operate have an impact on our provision of many products and services. Implementation of, and revisions to, these laws, regulations, rules and directives have affected our operations and risk profile. For example, the key regulatory frameworks impacting our operations in the EU and UK continue to diverge in a number of respects. Further divergence in the nature and scope of these regulations could have an adverse impact on our results of operations and business prospects.

In addition, we are subject in our global operations to rules and regulations relating to corrupt and illegal payments and money laundering, economic sanctions and embargo programs administered by the U.S. Office of Foreign Assets Control and similar bodies and governmental agencies worldwide, and laws relating to doing business with certain individuals, groups and countries, such as the U.S. Foreign Corrupt Practices Act, the USA PATRIOT Act, the Iran Threat Reduction and Syria Human Rights Act of 2012 and the UK Bribery Act. While we have invested and continue to invest significant resources in training and in compliance monitoring, the geographical diversity of our operations, employees, clients and customers, as well as the vendors and other third parties that we deal with, presents the risk that we may be found in violation of such rules, regulations or laws and any such violation could subject us to significant penalties or adversely affect our reputation. In addition, such rules could impact our ability to engage in business with certain individuals, entities, groups and countries, which could materially adversely affect certain of our businesses and results of operations. For example, following Russia’s invasion of Ukraine in the first quarter of 2022, we ceased new banking business in Russia and suspended investment management purchases of Russian securities. Government sanctions and our actions in response to the ongoing war in Ukraine have had and could continue to have a negative impact on our revenue and our business.

As a result of the recent implementation of data protection-related laws and regulations, including the EU GDPR, the California Consumer Privacy Act of 2018 and the New York Department of Financial Services' cybersecurity regulation, we need to allocate additional time and resources to comply with such laws and regulations, and our potential liability for non-compliance and reporting obligations in the case of data breaches has significantly increased. In addition, our businesses are increasingly subject to laws and regulations relating to privacy, surveillance, encryption and data localization in the jurisdictions in which we operate. Compliance with these laws and regulations has required us to change our policies, procedures and technology for information security and segregation of data, which, among other things, makes us more vulnerable to operational failures, and to monetary penalties for breach of such laws and regulations.

Failure to comply with laws, regulations or policies, or meet supervisory expectations, applicable to us and our businesses could result in civil or criminal sanctions or enforcement proceedings by regulatory or governmental authorities, money penalties and reputational damage, which could have a material adverse effect on our business, financial condition and results of operations. If violations of legal or regulatory requirements do occur, they could damage our reputation, increase our legal and compliance costs, including requiring us to devote substantial resources towards remediation efforts, and ultimately adversely impact our results of operations. Laws, regulations or policies currently affecting us and our subsidiaries, supervisory expectations, or regulatory and governmental authorities' interpretation of statutes and regulations may change at any time, which may adversely impact our business and results of operations.

See "Supervision and Regulation" for additional information regarding the potential impact of the regulatory environment on our business.

Regulatory or enforcement actions or litigation could materially adversely affect our results of operations or harm our businesses or reputation.

Like many major financial institutions, we and our affiliates are the subject of inquiries, investigations, lawsuits and proceedings by counterparties, clients, other third parties, tax authorities and regulatory and other governmental agencies in the U.S. and abroad, as well as the Department of Justice and state attorneys general. See "Legal proceedings" in Note 22 of the Notes to Consolidated Financial Statements for a discussion of material legal and regulatory proceedings in which we are involved. The number of these investigations and proceedings, as well as the amount of penalties and fines sought, has remained elevated for many firms in the financial services industry, including us. We have in the past been, and may in the future become, subject to heightened regulatory scrutiny, inquiries or investigations, and potentially client-related inquiries or claims, relating to broad, industry-wide concerns that could lead to increased expenses or reputational damage. Regulators and other governmental authorities may also be more likely to pursue enforcement actions, or seek admissions of wrongdoing or guilty pleas, in connection with the resolution of an inquiry or investigation to the extent a firm has previously been subject to other governmental investigations or enforcement actions. The current trend of large settlements by financial institutions with governmental entities may adversely affect the outcomes for other financial institutions in similar actions, especially where governmental officials have announced that the large settlements will be used as the basis or a template for other settlements. Separately, policymakers globally continue to focus on protection of client assets, as well as tax avoidance and evasion.

The complexity of the federal and state regulatory and enforcement regimes in the U.S., coupled with the global scope of our operations and the increased aggressiveness of the tax and regulatory environment worldwide, also means that a single event may give rise to a large number of overlapping investigations and regulatory proceedings, either by multiple federal and state agencies in the U.S. or by multiple regulators and other governmental entities or tax authorities in different jurisdictions. Responding to inquiries, investigations, lawsuits and proceedings, regardless of the ultimate outcome of the matter, is time consuming and expensive and can divert the attention of our senior management from our business. The outcome of such proceedings may be difficult to predict or estimate until late in the proceedings, which may last a number of years.

Certain of our subsidiaries are subject to periodic examination, special inquiries and potential proceedings by regulatory authorities. If compliance failures or other violations are found during an

examination, inquiry or proceeding, a regulatory agency could initiate actions and impose sanctions for violations, including, for example, regulatory agreements, remediation undertakings, cease and desist orders, civil monetary penalties or termination of a license and could lead to litigation by investors or clients, any of which could cause our earnings to decline.

Our businesses involve the risk that clients or others may sue us, claiming that we or third parties for whom they say we are responsible have failed to perform under a contract or otherwise failed to carry out a duty perceived to be owed to them, including perceived fiduciary or contractual duties. This risk may be heightened during periods when credit, equity or other financial markets are deteriorating in value or are particularly volatile, or when clients or investors are experiencing losses. As a publicly held company, we are also subject to the risk of claims under the federal securities laws. Volatility in our stock price increases this risk.

Increasingly, regulators, tax authorities and courts have sought to hold financial institutions liable for the misconduct of their clients where such regulators and courts have determined that the financial institution should have detected that the client was engaged in wrongdoing, even though the financial institution had no direct knowledge of the wrongdoing.

Actions brought against us may result in lawsuits, enforcement actions, injunctions, settlements, damages, fines or penalties, which could have a material adverse effect on our financial condition or results of operations or require changes to our business. Claims for significant monetary damages are asserted in many of these legal actions, while claims for disgorgement, penalties and/or other remedial sanctions may be sought in regulatory matters. Although we establish accruals for our litigation and regulatory matters in accordance with applicable accounting guidance, our exposure to such litigation and regulatory matters can be unpredictable, and when those matters proceed to a stage where they present loss contingencies that are both probable and reasonably estimable, there may be a material exposure to loss in excess of any amounts accrued, or in excess of any loss contingencies disclosed as reasonably possible. Such loss contingencies may not be probable and reasonably estimable until the proceedings have progressed significantly, which could take several years and occur close to resolution of the matter.

Each of the risks outlined above could result in increased regulatory supervision and affect our ability to attract and retain customers or maintain access to the capital markets.

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

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

Market Risk

We are dependent on fee-based business for a substantial majority of our revenue and our fee-based revenues could be adversely affected by slowing in market activity, weak financial markets, underperformance and/or negative trends in savings rates or in investment preferences.

Our principal operational focus is on fee-based business, which is distinct from commercial banking institutions that earn most of their revenues from loans and other traditional interest-generating products and services. In 2022, 79% of our total revenue was fee-based. Our fee-based businesses include investment and wealth management, custody,

corporate trust, depositary receipts, clearing, collateral management and treasury services, which are highly competitive businesses.

Fees for many of our products and services are based on the volume of transactions processed, the market value of assets managed and/or administered, securities lending volume and spreads, and fees for other services rendered. Corporate actions, cross-border investing, global mergers and acquisitions activity, new debt and equity issuances, and secondary trading volumes, among other things, all affect the level of our fee revenue. As the volume of these activities decreases due to low client activity, weak financial markets or otherwise, our fee-based revenues also decrease, which negatively impacts our results of operations.

If our Investment and Wealth Management businesses experience poor investment returns due to weak market conditions or underperformance (relative to competitors or benchmarks), the market values of the portfolios that we manage will be lower (on a relative basis) and our ability to retain existing assets and/or attract new client assets may be impacted. Market and regulatory trends have also resulted in increased demand for lower fee investment and wealth management products and services, and lower performance-fee structures, both of which have impacted and may continue to impact our fee revenue. Some of these dynamics have also negatively impacted fees in our Market and Wealth Services and Securities Services businesses and any of these dynamics may also occur in the future. Significant declines in the volume of capital markets activity would reduce the number of transactions we process and the amount of securities we lend and therefore would also have an adverse effect on our results of operations. Our business may be adversely impacted by decreases in the rate at which individuals invest in mutual funds and other collective funds, unit investment trusts or exchange-traded funds, or contribute to defined contribution plans. Changes in economic and market conditions, including as a result of higher market volatility, inflationary pressures, recessionary conditions or declines in equity values, could result in changes in the investment patterns of our clients or negatively impact the market value of client portfolios, each of which could have a negative impact on our results of operations.

When our investment management revenues decline, interest rates rise rapidly or other market factors affect the value of our investment management business, we may have, and in the past have had, declines in the fair value in our Investment Management reporting unit, one of the two reporting units in our Investment and Wealth Management segment. If the fair value of the Investment Management reporting unit declines below its carrying value, we would be required to take, and in the past have taken, an impairment charge.

Weakness and volatility in financial markets and the economy generally may materially adversely affect our business, financial condition and results of operations.

As a financial institution, our Investment Management, Wealth Management, Pershing, Depositary Receipts and Markets, including Securities Lending, businesses are particularly sensitive to economic and market conditions, including in the capital and credit markets. When these markets are volatile or disruptive, we have experienced declines in our fair valued assets, including in our securities portfolio and seed capital, as well as a fair value reduction in the portfolios that we manage that generate investment and wealth management fees. Conditions in the financial markets and the economy generally, both in the U.S. and elsewhere around the world have materially affected, and may continue to affect, our results of operations, including investment management fees.

Foreign exchange trading that we execute for clients generates revenues which are primarily driven by the volume of client transactions and the spread realized on these transactions, both of which are impacted by market volatility and the impact of foreign exchange hedging activities. Our clients' cross-border investing activity could decrease in reaction to economic and political uncertainties, including changes in laws or regulations governing cross-border transactions, such as currency controls or tariffs. Volumes and/or spreads in some of our products tend to benefit from currency volatility and are likely to decrease during times of lower currency volatility. Such revenues also depend on our ability to manage the risk associated with the currency transactions we execute and program pricing.

A variety of factors impact global economies and financial markets, including interest rates and their associated yield curves, commodity pricing, market and political instabilities, volatile debt and equity

market values, inflation and expectations relating to inflation trends, the strength of the U.S. dollar, the imposition of tariffs or other limitations on international trade or travel, high unemployment and governmental budget deficits (including, in the U.S., at the federal, state and municipal levels), and contagion risk from possible default on sovereign debt, declining business and consumer confidence. Any resulting economic pressure on consumers and lack of confidence in the financial markets may adversely affect our business, financial condition and results of operations. Additionally, global economies and financial markets may be adversely affected by widespread health emergencies or pandemics (including the further spread of SARS-CoV-2 or its variants), natural disasters, climate-related incidents, acts of war (such as the war in Ukraine), economic sanctions or other geopolitical events (or concerns over the possibility of such events). In particular, we face the following risks in connection with these factors, some of which are discussed at greater length in separate risk factors:

- Geopolitical tension and economic instability in countries around the world can at times increase the demand for low-risk investments, particularly in U.S. Treasuries and the dollar. A "flight to safety" has historically increased our balance sheet, which has negatively impacted, and could continue to negatively impact, our leverage-based regulatory capital measures. A sustained "flight to safety" has historically triggered a decline in trading, capital markets and cross-border activity which would likely decrease our revenue, negatively impacting our results of operations, financial condition and, if sustained in the long term, our business.
- The fees earned by our Investment Management and Wealth Management businesses are higher as assets under management and/or investment performance increase. Those fees are also impacted by the composition of the assets under management, with higher fees for some asset categories as compared to others. Uncertain and volatile capital markets, particularly declines, could result in movements from higher to lower fee products and/or reductions in our assets under management because of investors' decisions to withdraw assets or from simple declines in the value of assets under management as markets decline.
- Market conditions resulting in lower transaction volumes could have an adverse effect on the revenues and profitability of certain of our businesses such as clearing, settlement, payments and trading.
- Uncertain and volatile capital markets, particularly declines in equity prices, could reduce the value of our investments in securities, including pension and other post-retirement plan assets and produce downward pressure on our stock price and credit availability without regard to our underlying financial strength.
- Derivative instruments we hold for our own account to hedge and manage our exposure to market risks, including interest rate risk, equity price risk, foreign currency risk and credit risk associated with our products and businesses might not perform as intended or expected, resulting in higher realized losses and unforeseen stresses on liquidity. Our derivatives-based hedging strategies also rely on the performance of counterparties to such derivatives. These counterparties may fail to perform for various reasons resulting in losses on under-collateralized positions.
- The process we use to estimate our expected credit losses is subject to uncertainty in that it requires use of statistical models and difficult, subjective and complex judgments, including forecasts of economic conditions and how these conditions might impair the ability of our borrowers and others to meet their obligations. In uncertain and volatile economic environments, our ability to estimate our estimated credit losses may be impaired, which could adversely affect our overall profitability and results of operations.

For a discussion of our management of market risk, see "Risk Management – Risk Types Overview – Market Risk."

Levels of and changes in interest rates have impacted, and will in the future continue to impact, our profitability and capital levels, at times adversely.

We earn revenue, known as "net interest revenue," on the difference between the interest income earned on our interest-earning assets, such as the loans we make and the securities we hold in our investment securities portfolio, and the interest expense incurred on our interest-bearing liabilities, such as deposits and borrowed money. Additionally, we earn net interest revenue on other activities relating to interest-earning

assets and interest-bearing liabilities, such as reverse repurchase agreements and repurchase agreements, respectively. Our net interest margin, which is the result of dividing net interest revenue by average interest-earning assets, is sensitive to whether the interest rate paid or received is fixed or moves with changes in market interest rates.

The recent rise in rates, and any future rate increases, could adversely impact our business, financial condition and results of operations, due to:

- higher market volatility, recessionary conditions and declines in equity values, resulting in a decline in the valuation of assets under management;
- reduced liquidity in bonds and fixed-income funds, resulting in lower performance and fees;
- increased number of delinquencies, bankruptcies or defaults and more nonperforming assets and net charge-offs, as borrowers may have more difficulty making higher interest payments;
- higher redemptions from our fixed-income funds or separate accounts, as clients move funds into investments with higher rates of return;
- declines in deposit levels, resulting in reduced internal and regulatory liquidity buffers and lower revenues;
- reductions in the value of our fixed-income securities held for liquidity purposes;
- further increases in accumulated other comprehensive loss in our shareholders' equity and therefore our tangible common equity due to the impact of rising long-term rates on the available-for-sale securities in our investment portfolio, which would negatively affect our risk-based and leverage based regulatory capital ratios; or
- higher funding cost.

A declining short-term rate environment would likely adversely impact, and has in the past adversely impacted, our net interest revenue and results of operations due to:

- compression of our net interest margin, depending on our balance sheet position;
- constraints on our ability to achieve net interest revenue consistent with historical averages;
- sustained weakness of our spread-based revenues, resulting in continued voluntary waiving of fees on certain money market mutual funds and related distribution fees, in order to prevent the yields on such funds from becoming uneconomic; or
- adverse impacts on the value of our fixed-rate mortgage-backed securities, driven by higher mortgage prepayment speeds.

A more detailed discussion of the interest rate and market risks we face is contained in "Risk Management."

We have experienced, and may continue to experience, unrealized or realized losses on securities related to volatile and illiquid market conditions, reducing our capital levels and/or earnings.

We maintain an investment securities portfolio of various holdings, types and maturities. At Dec. 31, 2022, approximately 61% of these securities were classified as available-for-sale, which are recorded on our balance sheet at fair value with unrealized gains or losses reported as a component of accumulated other comprehensive income, net of tax. The securities in our held-to-maturity portfolio, recorded on our balance sheet at amortized cost, were approximately 39% of our securities portfolio at Dec. 31, 2022. Our available-for-sale securities portfolio, to the extent unhedged, may have more volatility to accumulated other comprehensive income or earnings than a portfolio comprised exclusively of, for example, U.S. Treasury securities or, alternatively, a loan portfolio that is accounted for at amortized cost.

Our investment securities portfolio represents a greater proportion of our consolidated total assets (approximately 35% at Dec. 31, 2022), in comparison to many other major U.S. financial institutions due to our custody and trust bank business model. Accordingly, our capital levels and results of operations and financial condition are materially exposed to the risks associated with our investment securities portfolio.

We reserve for current expected credit losses with respect to our available-for-sale and held-to-maturity securities. Credit losses in excess of our allowance for credit losses would impact our results of operations.

Under the U.S. capital rules, after-tax changes in the fair value of available-for-sale investment securities are included in CET1 capital. Since held-to-maturity securities are not subject to fair-value accounting, changes in the fair value of these instruments (other than expected credit losses) are not similarly included in the determination of CET1 capital. As a result, we may experience increased variability in our CET1 capital relative to those major financial institutions who maintain a lower proportion of their consolidated total assets in an available-for-sale accounting classification.

Generally, the fair value of available-for-sale securities is determined based on market prices available from third-party sources. During periods of market disruption, it may be difficult to value certain of our investment securities if trading becomes less frequent and/or market data becomes less observable. As a result, valuations may include inputs and assumptions that are less observable or require greater estimation and judgment as well as valuation methods which are more complex. These values may not be ultimately realizable in a market transaction, and such values may change very rapidly as market conditions change and valuation assumptions are modified. Decreases in value may have a material adverse effect on our results of operations or financial condition. The estimate of expected credit losses is determined in part by management's assessment of the financial condition and prospects of a particular issuer, projections of future cash flows and recoverability of the particular security. Management's conclusions on such assessments are highly judgmental and include assumptions and projections of future cash flows which may ultimately prove to be incorrect as assumptions, facts and circumstances change. On the other hand, we are limited in the actions we can take related to our held-to-maturity securities absent a significant deterioration in the issuer's creditworthiness. Therefore, we may be constrained in our ability to liquidate a held-to-maturity security that is deteriorating in value, which would negatively impact the fair value of our securities portfolio. If our determinations change about our intention or ability to not sell available-for-sale securities that have experienced a reduction in fair value below their amortized cost, we could be required to recognize a loss in earnings for the entire difference between fair value and amortized cost.

For information regarding our investment securities portfolio, refer to "Consolidated balance sheet review – Securities."

Transitions away from and the replacement of LIBOR and other IBORs could adversely impact our business, financial condition and results of operations.

The FCA and the administrator for LIBOR have announced that the publication of the most commonly used U.S. dollar LIBOR settings will cease to be published or cease to be representative after June 30, 2023. The publication of all other LIBOR settings ceased to be published or to be representative as of Dec. 31, 2021. In addition, the U.S. bank regulators had also issued guidance strongly encouraging banking organizations to cease using U.S. dollar LIBOR as a reference rate in new contracts by Dec. 31, 2021. As a result, financial market participants have begun to transition away from IBORs. This transition is further supported by the requirements of the EU Benchmarks Regulation, which no longer permits IBORs that rely on quotes or estimates submitted by contributing banks that are not anchored in transaction-based data.

Various regulators, industry bodies and other market participants in the U.S. and other countries are engaged in initiatives to develop, introduce and encourage the use of alternative rates to replace certain benchmarks. However, the introduction of, and adoption of, successor rates had been slow until late 2021. In the U.S., SOFR has been identified by the Alternate Reference Rates Committee convened by the Federal Reserve as the alternative benchmark rate to U.S. dollar LIBOR, and the LIBOR Act, which was enacted in March 2022, provides a statutory framework to replace U.S. dollar LIBOR with a benchmark rate based on SOFR for certain contracts governed by U.S. law. However, there continues to be substantial uncertainty as to the ultimate effects of LIBOR transition, including with respect to the acceptance and use of SOFR or other alternative benchmark rates or the effectiveness of legislative initiatives, such as the LIBOR Act. The characteristics of these new rates are not identical to the benchmarks they seek to replace, will not produce the exact economic equivalent as those benchmarks, and may perform differently in a variety of market conditions compared to those benchmarks. For example, during the early stages of the COVID-19

pandemic, there was more volatility in SOFR as compared to LIBOR.

Transitions to SOFR and other alternative rates or benchmarks may cause LIBOR (in the case of LIBOR-linked instruments that have not yet transitioned) or the applicable alternative benchmark rates to perform differently, or have other consequences which cannot be predicted. In the event any such benchmark or other referenced financial metric is significantly changed or discontinued (for example, when LIBOR and other IBORs cease to be published), or are no longer recognized as an acceptable benchmark, there may be uncertainty as to the calculation of the applicable interest rate or payment amount for certain financial instruments or contracts, depending on the terms of the governing instrument. In addition, even if the method of calculation of a fallback rate is clear, the resulting interest rate or payment amount may be different than the interest rate or payment amount that would have applied based on the original benchmark.

We may be adversely impacted by the changes involving LIBOR and other benchmark rates as a result of our business activities and our underlying operations. We utilize benchmark rates in a variety of agreements and instruments and are responsible for the use of benchmark rates in a variety of capacities, as well as in our operational functions. We could be subject to claims from customers, counterparties, investors or regulators alleging that, notwithstanding any uncertainty around the rate environment, we did not correctly discharge our responsibilities. We could also face claims in connection with the interpretation and implementation of fallback provisions. The LIBOR transition presents various challenges related to contractual mechanics of existing floating rate financial instruments and contracts that reference LIBOR and mature after the applicable setting ceases to be published or regarded as representative. Certain of these instruments and contracts do not provide for alternative benchmark rates, which makes it unclear what the future benchmark rates would be after LIBOR's cessation. Although the LIBOR Act has provided clarity on the replacement of U.S. dollar LIBOR for certain contracts, significant uncertainty remains for contracts not covered by the LIBOR Act. Moreover, particular contracts may require fallback rates that are different from the most widely used alternative to LIBOR.

Fluctuations in interest rates triggered by the transition away from LIBOR and other IBORs could adversely affect the availability or cost of floating-rate funding. We could experience losses on a product or have to pay more or receive less on securities that we own or have issued. We may also not be able to successfully amend or renegotiate IBOR-based agreements and instruments, including as a result of a failure to receive the requisite consent from counterparties, which could have adverse impacts. Such impacts include, in some cases, agreements and instruments effectively bearing interest at a fixed rate (rather than a floating rate) based on the last IBOR rate that was able to be determined under the document. A variety of factors may affect the transition from existing IBOR-based rates to alternative benchmark rates, including, for example, whether transactions that serve as the basis for alternative benchmark rates and IBOR-based rates are similarly secured (or unsecured) transactions, or are of a similar tenor.

Divergences between existing IBOR-based and alternative benchmark rates (or rates fixed at the last determined IBOR rate) may result in our hedges being ineffective. In addition, uncertainty relating to LIBOR or another benchmark could result in, and in some cases have resulted in, pricing volatility, increased capital requirements, loss of market share in certain products, adverse tax or accounting consequences, higher compliance, legal and operational costs, increased difficulty in estimating our net interest revenue, and risks associated with client disclosures, discretionary actions taken or negotiation of fallback provisions, and disruption of business continuity, systems and models, all of which may adversely impact our business and results of operations. Use of alternative benchmark rates may also, in some cases, be limited or prohibited by contract, law or regulation.

There can be no assurance that we, other market participants, clients and vendors will be adequately prepared for an actual discontinuation of IBORs, that existing assets and liabilities based on or linked to IBORs will transition successfully to alternative benchmark rates or that appropriate systems and analytics would be developed for one or more alternative benchmark rates, any of which could adversely impact our business, financial condition and results of operations.

Credit Risk

The failure or perceived weakness of any of our significant clients or counterparties, many of whom are major financial institutions or sovereign entities, and our assumption of credit, counterparty and concentration risk, could expose us to loss and adversely affect our business.

We have exposure to clients and counterparties in many different industries, particularly financial institutions, as a result of trading, clearing and financing, providing custody services, securities lending services or other relationships. We routinely execute transactions with global clients and counterparties in the financial industry as well as sovereigns and other governmental or quasi-governmental entities. Our direct exposure consists of extensions of secured and unsecured credit to clients and use of our balance sheet. In addition to traditional credit activities, we also extend intraday credit in order to facilitate our various processing, settlement and intermediation activities. Our ability to engage in funding or other transactions could be adversely affected by the actions and commercial soundness of other financial institutions or sovereign entities, as defaults or non-performance (or even uncertainty concerning such default or non-performance) by one or more financial institutions, or the financial services industry generally, have in the past led to market-wide liquidity problems and could lead to losses or defaults by us or by other institutions (including our counterparties and/or clients) in the future. The consolidation and failures of financial institutions during the 2008 financial crisis increased the concentration of our client and counterparty risk.

As a result of our membership in several industry clearing or settlement exchanges and central counterparty clearinghouses, 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. These obligations may be limited to members that dealt with the defaulting member or to the amount (or a multiple of the amount) of our contribution to a clearing or settlement exchange guarantee fund, or, in a few cases, the obligation may be unlimited.

When we provide credit to clients in connection with providing cash management, clearing, custodial and other services, we are exposed to potential loss if the client experiences credit difficulties. Higher market volatility, inflationary pressures, recessionary conditions or declines in equity values could negatively affect the creditworthiness of our clients, which, in turn, would increase our credit risk. We are also generally not able to net exposures across affiliated clients or counterparties and may not be able to net exposures to the same legal entity across multiple products. In addition, we may incur a loss in relation to one entity or product even though our exposure to one of the entity's affiliates is over-collateralized. Moreover, not all of our client or counterparty exposure is secured.

In our agency securities lending program, we act as agent on behalf of our clients, the lenders of securities, in securities lending transactions with our clients' counterparties (including broker-dealers), acting as borrowers, wherein securities are lent by our clients and the securities loans are collateralized by cash or securities posted by such counterparties. Typically, in the case of cash collateral, our clients authorize us as their agent to invest the cash collateral in approved investments pursuant to each client's investment guidelines and instructions. Such approved investments may include reverse repurchase transactions with repo counterparties. In many cases, in the securities loans we enter into on behalf of our clients, we agree to replace the client's loaned securities that the borrower fails to return due to certain defaults by the borrower, mainly the borrower's insolvency. Therefore, in situations where the market value of the loaned securities that the borrower fails to return to a client (which loaned securities we are obligated to replace and return to the client) exceeds the amount of proceeds resulting from the liquidation of the client's approved investments and cash and non-cash collateral of such client, we may be responsible for the shortfall amount necessary to purchase any replacement securities. In addition, in certain cases, we may also assume the risk of loss related to approved investments that are reverse repurchase transactions as described above. In these two scenarios, we, rather than our clients, are exposed to the risks of the defaulting counterparty in the securities lending transactions and, where applicable, in the reverse repurchase transactions. For further discussion on our securities lending indemnifications, see "Commitments and contingent liabilities – Off-balance sheet arrangements" in Note 22 of the Notes to Consolidated Financial Statements.

From time to time, we assume concentrated credit risk at the individual obligor, counterparty or group

level, potentially exposing us to a single market or political event or a correlated set of events. For example, we may be exposed to defaults by companies located in countries with deteriorating economic conditions or by companies in certain industries. Our commercial real estate portfolio also exposes us to concentrated credit risk, including to the New York metro market. 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 material also vary during any reported period; however, our largest exposures tend to be to other financial institutions, clearing organizations, and governmental entities, both inside and outside the U.S. 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.

Although our overall business is subject to these interdependencies, several of our businesses are particularly sensitive to them, including our currency and other trading activities, our securities lending and securities finance businesses and our investment management business. If we experience any of the losses described above, it may materially and adversely affect our results of operations.

We are also subject to the risk that our rights against third parties may not be enforceable in all circumstances. In addition, deterioration in the credit quality of third parties whose securities or obligations we hold, including a deterioration in the value of collateral posted by third parties to secure their obligations to us under derivatives contracts and other agreements, could result in losses and/or adversely affect our ability to rehypothecate or otherwise use those securities or obligations for liquidity purposes. Disputes with clients and counterparties as to the valuation of collateral can significantly increase in times of market stress and illiquidity. In addition, disruptions in the liquidity or transparency of the financial markets may result in our inability to sell, syndicate or realize the value of our positions, thereby leading to increased concentrations. An inability to reduce our positions may not only increase the market and credit risks associated with such positions, but may also increase the level of RWA on our balance sheet, thereby increasing our capital requirements and funding costs, all of which could adversely affect the operations and profitability of our businesses.

Under U.S. regulatory restrictions on credit exposure, which include a broadening of the measure of credit exposure, we are required to limit our exposures to specific obligors or groups, including financial institutions. These regulatory credit exposure restrictions may adversely affect our businesses and may require us to modify our operating models or the policies and practices we use.

We could incur losses if our allowance for credit losses, including loan and lending-related commitment reserves, is inadequate or if our expectations of future economic conditions deteriorate.

When we loan money, commit to loan money or provide credit or enter into another contract with a counterparty, we incur credit risk, or the risk of loss if our borrowers do not repay their loans or our counterparties fail to perform according to the terms of their agreements. Our revenues and profitability are adversely affected when our borrowers default, in whole or in part, on their loan obligations to us or when there is a significant deterioration in the credit quality of our loan portfolio. We reserve for potential future credit losses by recording a provision for credit losses through earnings. The allowance for loan losses and allowance for lending-related commitments represents management's estimate of current expected credit losses over the lifetime of the related credit exposure taking into account relevant information about past events, current conditions and reasonable and supportable forecasts of future economic conditions that affect the collectability of our loans and lending commitments. We use a quantitative methodology and qualitative framework for determining the allowance for loan losses and the allowance for lending-related commitments. Within this qualitative framework, management applies judgment when assessing internal risk factors and environmental factors to compute an additional allowance for each component of the loan portfolio. As is the case with any such judgments, we could fail to identify these factors or accurately estimate their impact. We cannot provide any assurance as to whether charge-offs related to our credit exposure may occur in the future. Current and future market and economic developments may increase default and

delinquency rates and negatively impact the quality of our credit portfolio, which may impact our charge-offs. Although our estimates contemplate current conditions and how we expect them to change over the life of the portfolio, it is reasonably possible that actual conditions could be worse than anticipated in those estimates, which could materially affect our results of operations and financial condition. See "Critical accounting estimates."

Capital and Liquidity Risk

Our business, financial condition and results of operations could be adversely affected if we do not effectively manage our liquidity.

Our operating model and overall strategy rely heavily on our access to financial market utilities and global capital markets. Without such access, it would be difficult to process payments and settle and clear transactions on behalf of our clients. Deterioration in our liquidity position, whether actual or perceived, can impact our market access by affecting participants' willingness to transact with us. Changes to our liquidity can be caused by various factors, such as funding mismatches, market constraints disabling asset to cash conversion, inability to issue debt, run-offs of core deposits, and contingent liquidity events such as additional collateral posting. Changes in economic conditions or exposure to credit, market, operational, legal and reputational risks can also affect our liquidity.

Our business is dependent in part on our ability to meet our cash and collateral obligations at a reasonable cost for both expected and unexpected cash flows. We also must manage liquidity risks on an intraday basis, in a manner designed to ensure that we can access required funds during the business day to make payments or settle immediate obligations, often in real time. We receive client deposits through a variety of investment management and investment servicing businesses and we rely on those deposits as a low-cost and stable source of funding. Our ability to continue to receive those deposits, and other short-term funding sources, is subject to variability based on a number of factors, including volume and volatility in the global securities markets, the relative interest rates that we are prepared to pay for those deposits, and the perception of the safety of those deposits or other short-term obligations relative to alternative short-term investments available to our clients. We could lose deposits if we suffer a significant decline in the level of our business activity, our credit ratings are materially downgraded, interest rates continue to rise, or we are subject to significant negative press or significant regulatory action or litigation, among other reasons. Our liquidity could also be adversely affected by customers' withdrawal of deposits in response to volatility and disruptions in the financial market or a stress event. If we were to lose a significant amount of deposits, we may need to replace such funding with more expensive funding and/or reduce assets, which would reduce our net interest revenue.

The degree of client demand for short-term credit tends to increase during periods of market turbulence. For example, investors in mutual funds for which we act as custodian may engage in significant redemption activity due to adverse market or economic conditions. We may then extend intraday credit to our fund clients in order to facilitate their ability to pay such redemptions. In addition, during periods of market turbulence, draws under committed revolving credit facilities that we provide to our institutional clients may increase substantially, as occurred in March 2020. Such client demand may negatively impact our leverage-based capital ratios, and in times of sustained market volatility, may result in significant leverage-based ratio declines.

In addition, our access to the debt and equity capital markets is a significant source of liquidity. Events or circumstances often outside of our control, such as market disruptions, government fiscal and monetary policies, uncertainty over the U.S. government debt ceiling or loss of confidence by securities purchasers or counterparties in us or in the funds markets, could limit our access to capital markets, increase our cost of borrowing, adversely affect our liquidity, or impair our ability to execute our business plan. In addition, clearing organizations, regulators, clients and financial institutions with which we interact may exercise the right to require additional collateral based on market perceptions or market conditions, which could further impair our access to and cost of funding. Market perception of sovereign default risks can also lead to inefficient money markets and capital markets, which could further impact our funding availability and cost. Conversely, excess liquidity inflows could increase interest expense, limit our financial flexibility, and increase the size of our total assets in a manner that could have a negative impact on our capital ratios.

Under the U.S. capital rules, the size of the capital surcharge that applies to U.S. G-SIBs is based in part on its reliance on short-term wholesale funding, including certain types of deposit funding, which may increase the cost of such funding. Furthermore, certain non-U.S. authorities require large banks to incorporate a separate subsidiary in countries in which they operate, and to maintain independent capital and liquidity at foreign subsidiaries. These requirements could hinder our ability to efficiently manage our funding and liquidity in a centralized manner, requiring us to hold more capital and liquidity overall.

In addition, our cost of funding could be affected by actions that we may take in order to satisfy applicable LCR and NSFR requirements, to lower our G-SIB score, to satisfy the amount of eligible long-term debt outstanding under the TLAC rule, to address obligations under our resolution plan or to satisfy regulatory requirements in non-U.S. jurisdictions relating to the pre-positioning of liquidity in certain subsidiaries.

If we are unable to raise funds using the methods described above, we would likely need to finance, reduce or liquidate unencumbered assets, such as our central bank deposits and bank placements, or securities in our investment portfolio to meet funding needs. We may be unable to sell some of our assets, or we may have to sell assets at a discount from market value, either of which could adversely affect our business, financial condition and results of operations. Further, our ability to sell assets may be impaired if other market participants are seeking to sell similar assets at the same time, which could occur in a liquidity or other market crisis. Additionally, if we experience cash flow mismatches, deposit run-off or market constraints resulting from our inability to convert assets to cash or access capital markets, our liquidity could be severely impacted. During periods of market uncertainty, our level of client deposits has in recent years tended to increase; however, because these deposits have high potential run-off rates, we have historically deposited these so-called excess deposits with central banks and in other highly liquid and low-yielding instruments.

If we are unable to continue to fund our assets through deposits or access capital markets on favorable terms or if we suffer an increase in our borrowing costs or otherwise fail to manage our liquidity effectively, our liquidity, net interest margin, financial results and condition may be materially adversely affected. In certain cases, this could require us to raise additional capital through the issuance of preferred or common stock, which could dilute the ownership of existing stockholders, and/or reduce common stock repurchases or our common stock dividend to preserve capital. For a further discussion of our liquidity, see "Liquidity and dividends."

Failure to satisfy regulatory standards, including "well capitalized" and "well managed" status or capital adequacy and liquidity rules more generally, could result in limitations on our activities and adversely affect our business and financial condition.

Under U.S. and international regulatory capital adequacy rules and other regulatory requirements, we and our subsidiary banks must meet thresholds that include quantitative measures of assets, liabilities, and certain off-balance sheet items, subject to qualitative judgments by regulators about components, risk weightings and other factors. As discussed in "Supervision and Regulation," BNY Mellon is registered with the Federal Reserve as a BHC and an FHC. An FHC's ability to maintain its status as an FHC is dependent upon a number of factors, including its U.S. bank subsidiaries qualifying on an ongoing basis as "well capitalized" and "well managed" under the banking agencies' prompt corrective action regulations as well as applicable Federal Reserve regulations. Failure by an FHC or one of its U.S. bank subsidiaries to qualify as "well capitalized" and "well managed," if unremedied over a period, would cause it to lose its status as an FHC and could affect the confidence of clients in it, compromising its competitive position. Additionally, an FHC that does not continue to meet all the requirements for FHC status could lose the ability to undertake new activities or make acquisitions that are not generally permissible without FHC status or to continue such activities.

The failure by one of our U.S. bank subsidiaries to maintain its status as "well capitalized" could lead to, among other things, higher FDIC assessments and could have reputational and associated business consequences.

If we or our subsidiary banks fail to meet U.S. and international minimum capital rules and other regulatory requirements, we may not be able to

deploy capital in the operation of our business or distribute capital to stockholders, which may adversely affect our business.

Failure to meet any current or future capital or liquidity requirements, including those imposed by the U.S. capital rules, the LCR, the NSFR, or by regulators in implementing other portions of the Basel III framework, could materially adversely affect our financial condition. Compliance with U.S. and international regulatory capital and liquidity requirements may impact our ability to return capital to shareholders and may impact our operations by requiring us to liquidate assets, increase borrowings, issue additional equity or other securities, or cease or alter certain operations, which may adversely affect our results of operations.

Finally, our regulatory capital ratios, liquidity metrics, and related components are based on our current interpretation, expectations, and understanding of the applicable rules and are subject to, among other things, ongoing regulatory review, regulatory approval of certain statistical models, additional refinements, modifications or enhancements (whether required or otherwise) to our models, and further implementation guidance. Any modifications resulting from these ongoing reviews or the continued implementation of the U.S. capital rules, the LCR, the NSFR, the resolution planning process, and related amendments could result in changes in our risk-weighted assets, capital components, liquidity inflows and outflows, HQLA, or other elements involved in the calculation of these measures, which could impact regulatory capital and liquidity ratios. Further, because operational risk is currently measured based not only upon our historical operational loss experience but also upon ongoing events in the banking industry generally, our level of operational risk-weighted assets could significantly increase or otherwise remain elevated and may potentially be subject to significant volatility, negatively impacting our capital ratios. The uncertainty caused by these factors could ultimately impact our ability to meet our goals, supervisory requirements, and regulatory standards.

The Parent is a non-operating holding company and, as a result, is dependent on dividends from its subsidiaries and extensions of credit from its IHC to meet its obligations, including with respect to its securities, and to provide funds for share repurchases and payment of dividends to its stockholders.

The Parent is a non-operating holding company, whose principal assets and sources of income are its principal U.S. bank subsidiaries—The Bank of New York Mellon and BNY Mellon, N.A.—and its other subsidiaries, including Pershing and the IHC. The Parent is a legal entity separate and distinct from its banks, the IHC and other subsidiaries. Therefore, the Parent primarily relies on dividends, interest, distributions, and other payments from its subsidiaries, including extensions of credit from the IHC, to meet its obligations, including with respect to its securities, and to provide funds for share repurchases and payment of common and preferred dividends to its stockholders, to the extent declared by the Board of Directors.

There are various limitations on the extent to which our banks and other subsidiaries can finance or otherwise supply funds to the Parent (by dividend or otherwise) and certain of our affiliates. Each of these restrictions can reduce the amount of funds available to meet the Parent's obligations. Many of our subsidiaries, including our bank subsidiaries, are subject to laws and regulations that restrict dividend payments or authorize regulatory bodies to block or reduce the flow of funds from those subsidiaries to the Parent or other subsidiaries. In addition, our bank subsidiaries would not be permitted to distribute a dividend if doing so would constitute an unsafe and unsound practice or if the payment would reduce their capital to an inadequate level. Our subsidiaries may also choose to restrict dividend payments to the Parent in order to increase their own capital or liquidity levels. Our bank subsidiaries are also subject to restrictions on their ability to lend to or transact with non-bank affiliates, minimum regulatory capital and liquidity requirements, and restrictions on their ability to use funds deposited with them in bank or brokerage accounts to fund their businesses. See "Supervision and Regulation" and "Liquidity and dividends" and Note 19 of the Notes to Consolidated Financial Statements. Further, we evaluate and manage liquidity on a legal entity basis, which may place legal and other limitations on our ability to utilize liquidity from one legal entity to satisfy the liquidity requirements of another, including the Parent.

There are also limitations specific to the IHC's ability to make distributions or extend credit to the Parent.

The IHC is not permitted to pay dividends to the Parent if certain key capital and liquidity indicators are breached, and if the resolution of the Parent is imminent, the committed lines of credit provided by the IHC to the Parent will automatically terminate, with all outstanding amounts becoming due.

Because the Parent is a holding company, its rights and the rights of its creditors, including the holders of its securities, to a share of the assets of any subsidiary upon the liquidation or recapitalization of the subsidiary, will be subject to the prior claims of the subsidiary's creditors (including, in the case of our banking subsidiaries, their depositors) except to the extent that the Parent may itself be a creditor with recognized claims against the subsidiary. The rights of holders of securities issued by the Parent to benefit from those distributions will also be junior to those prior claims. Consequently, securities issued by the Parent will be effectively subordinated to all existing and future liabilities of our subsidiaries.

Our ability to return capital to shareholders is subject to the discretion of our Board of Directors and may be limited by U.S. banking laws and regulations, including those governing capital and capital planning, applicable provisions of Delaware law and our failure to pay full and timely dividends on our preferred stock.

Holders of our common and preferred stock are only entitled to receive such dividends or other distributions of capital as our Board of Directors may declare out of funds legally available for such payments. Although we have historically declared cash dividends on our common and preferred stock, we are not required to do so. In addition to the Board of Directors' approval, our ability to take certain actions, including our ability to declare dividends or repurchase our common stock, may be subject to limitations in connection with the CCAR process and the buffers under the Federal Reserve's capital and TLAC rules. Through the CCAR process, we may be required to resubmit our capital plan in the event of a deterioration in the general financial markets or economy or changes in our risk profile (including a material change in business strategy or risk exposure), financial condition or corporate structure. For example, in connection with the onset of the COVID-19 pandemic in 2020, the Federal Reserve required all banking institutions subject to CCAR, including us, to resubmit their capital plans based on updated supervisory scenarios released by the Federal Reserve, and imposed temporary limitations on capital distributions and share repurchases by such banking institutions. The Federal Reserve is also able, outside the CCAR process, to restrict our ability to make capital distributions and subject us to other supervisory or enforcement actions.

A Federal Reserve determination that our capital planning processes were weak or otherwise fail to meet supervisory expectations could have a variety of adverse consequences, including, without limitation, ratings downgrades, ongoing heightened supervisory scrutiny, expenses associated with remediation activities, and potentially an enforcement action.

A failure to increase dividends along with our competitors, or any reduction of, or elimination of, our common stock dividend would likely adversely affect the market price of our common stock, impact our return on equity and market perceptions of BNY Mellon.

Our ability to declare or pay dividends on, or purchase, redeem or otherwise acquire, shares of our common stock will be prohibited, subject to certain exceptions, in the event that we do not declare and pay in full dividends for the then-current dividend period (in the case of dividends) or most recently completed dividend period (in the case of repurchases) of our Series A preferred stock or the last preceding dividend period (in the case of dividends) or most recently completed dividend period (in the case of repurchases) of our Series D, Series F, Series G, Series H or Series I preferred stock.

In addition, regulatory capital rules that are or will be applicable to us including the U.S. capital rules risk-based capital requirements, the SLR, the stress capital buffer, the enhanced SLR, the TLAC rule and the U.S. G-SIB surcharge may limit or otherwise restrict how we utilize our capital, including common stock dividends and stock repurchases, and may require us to increase or alter the mix of our outstanding regulatory capital instruments. Changes in the composition of our balance sheet, including as a result of changing economic conditions and market values, may further require us to increase or alter the mix of our outstanding regulatory capital, which in turn could impact our ability to return capital to shareholders.

Any requirement to increase our regulatory capital ratios or alter the composition of our capital could require us to liquidate assets or otherwise change our business and/or investment plans, which may negatively affect our financial results. Further, any requirement to maintain higher levels of capital may constrain our ability to return capital to shareholders either in the form of common stock dividends or stock repurchases.

Any material reduction in our credit ratings or the credit ratings of our principal bank subsidiaries, The Bank of New York Mellon or BNY Mellon, N.A., could increase the cost of funding and borrowing to us and our rated subsidiaries and have a material adverse effect on our business, financial condition and results of operations and on the value of the securities we issue.

Our debt and preferred stock and the debt and deposits of our principal bank subsidiaries, The Bank of New York Mellon and BNY Mellon, N.A., are currently rated investment grade by the major rating agencies. These rating agencies regularly evaluate us and our rated subsidiaries. Their credit ratings are based on a number of factors, including our financial strength, performance, prospects and operations, as well as factors not entirely within our control, including conditions affecting the financial services industry generally and the U.S. government. Rating agencies employ different models and formulas to assess the financial strength of a rated company, and from time to time rating agencies have, in their discretion, altered these models. Changes to rating agency models, general economic conditions, regulatory developments or other circumstances outside our control could negatively impact a rating agency's judgment of the rating or outlook it assigns to us or our rated subsidiaries. As a result, we or our rated subsidiaries may not be able to maintain our respective credit ratings or outlook on our securities.

A material reduction in our credit ratings or the credit ratings of our rated subsidiaries, which can occur at any time without notice, could have a material adverse effect on our access to credit markets, the related cost of funding and borrowing, our credit spreads, our liquidity and on certain trading revenues, particularly in those businesses where counterparty creditworthiness is critical. In addition, in connection with certain over-the-counter derivatives contracts and other trading agreements, counterparties may require us or our rated subsidiaries to provide additional collateral or to terminate these contracts and agreements and collateral financing arrangements in the event of a credit ratings downgrade below certain ratings levels, which could impair our liquidity. If a rating agency downgrade were to occur during broader market instability, our options for responding to events may be more limited and more expensive, possibly significantly. An increase in the costs of our funding and borrowing, or an impairment of our liquidity, could have a material adverse effect on our results of operations and financial condition. A material reduction in our credit ratings also could decrease the number of investors and counterparties willing or permitted to do business with or lend to us and adversely affect the value of the securities we have issued or may issue in the future.

We cannot predict what actions rating agencies may take, or what actions we may elect or be required to take in response thereto, which may adversely affect us. For further discussion on the impact of a credit rating downgrade, see "Disclosure of contingent features in OTC derivative instruments" in Note 23 of the Notes to Consolidated Financial Statements.

The application of our Title I preferred resolution strategy or resolution under the Title II orderly liquidation authority could adversely affect the Parent's liquidity and financial condition and the Parent's security holders.

In 2017, in connection with our single point of entry resolution strategy under Title I of the Dodd-Frank Act, the Parent entered into a binding support agreement with certain key subsidiaries to facilitate the provision of capital and liquidity resources to them in the event of material financial distress or failure. The support agreement requires the Parent to transfer cash and other liquid financial assets to the IHC on an ongoing basis, subject to certain amounts retained by the Parent to meet its near-term cash needs, in exchange for unsecured subordinated funding notes issued by the IHC as well as a committed line of credit to the Parent to service its near-term obligations. The Parent's and the IHC's obligations under the support agreement are secured.

If our projected liquidity resources deteriorate so severely that resolution of the Parent becomes imminent, the committed line of credit the IHC provided to the Parent will automatically terminate, with all amounts outstanding becoming due and payable, and the support agreement will require the

Parent to transfer most of its remaining assets (other than stock in subsidiaries and a cash reserve to fund bankruptcy expenses) to the IHC. As a result, during a period of severe financial stress, the Parent could become unable to meet its debt and payment obligations (including with respect to its securities), causing the Parent to seek protection under bankruptcy laws earlier than it otherwise would have.

If the Parent were to become subject to a bankruptcy proceeding and our single point of entry strategy is successful, our material entities will not be subject to insolvency proceedings and their creditors would not be expected to suffer losses, while the Parent's security holders, including unsecured debt holders, could face significant losses, potentially including the loss of their entire investment. The single point of entry strategy, in which the Parent would be the only legal entity to enter resolution proceedings, is designed to result in greater risk of loss to holders of the Parent's unsecured senior debt securities and other securities than would be the case under a different resolution strategy.

Further, if the single point of entry strategy is not successful, our liquidity and financial condition would be adversely affected and all security holders may, as a consequence, be in a worse position than if the strategy had not been implemented.

In addition, Title II of the Dodd-Frank Act established an orderly liquidation process in the event of the failure of a large systemically important financial institution, such as BNY Mellon, in order to avoid or mitigate serious adverse effects on the U.S. financial system. Specifically, if BNY Mellon is in default or danger of default, and certain specified conditions are met, the FDIC may be appointed receiver under the orderly liquidation authority, and we would be resolved under that authority instead of the U.S. Bankruptcy Code.

U.S. supervisors have indicated that a single point of entry strategy may be a desirable strategy to resolve a large financial institution such as BNY Mellon under Title II in a manner that would, similar to our preferred strategy under our Title I resolution plan, impose losses on shareholders, unsecured debt holders and other unsecured creditors of the Parent, while permitting the holding company's subsidiaries to continue to operate and remain solvent. Under such a strategy, assuming the Parent entered resolution proceedings and its subsidiaries remained solvent, losses at the subsidiary level would be absorbed by the Parent and ultimately borne by the Parent's security holders (including holders of the Parent's unsecured debt securities), while third-party creditors of the Parent's subsidiaries would not be expected to suffer losses. Accordingly, the Parent's security holders (including holders of unsecured debt securities and other unsecured creditors) could face losses in excess of what otherwise would have been the case.

Strategic Risk

New lines of business, new products and services or transformational or strategic project initiatives subject us to new or additional risks, and the failure to implement these initiatives could affect our results of operations.

From time to time, we have launched new lines of business, offered new products and services within existing lines of business or undertaken transformational or strategic projects. There are substantial risks and uncertainties associated with these efforts. We invest significant time and resources in developing and marketing new lines of business, products and services and executing on our transformational and strategic initiatives. For example, we have devoted considerable resources to developing new technology solutions for our clients, including our initiatives related to real-time electronic payments and global collateral management. If these technology solutions are not successful, it could adversely impact our reputation, business and results of operations. In 2021, we announced a strategic initiative to develop a multi-asset digital custody and administration platform designed to simultaneously support both traditional and digital assets, including cryptocurrencies. As part of this initiative, we have started to provide custody services for a limited number of cryptocurrencies for select U.S. institutional clients. Developing and providing new products and services, including those relating to digital assets, increases our operational risk exposures. These risks are often heightened in connection with asset classes, such as digital assets, that are not only new for BNY Mellon but also relatively new to the financial markets more broadly. Compared with our activities involving traditional assets, digital asset-related products or services may introduce incremental or unique risks, particularly those associated with cybersecurity exposures and

third-party dependencies, as well as reputational, technology, legal and regulatory risks.

Regulatory requirements can affect whether initiatives are able to be brought to market in a manner that is timely and attractive to our customers. Initial timetables for the development and introduction of new lines of business or new products or services and price and profitability targets may not be met. Furthermore, our revenues and costs may fluctuate because new businesses or products and services generally require startup costs while revenues may take time to develop, which may adversely impact our results of operations.

Significant effort and resources are necessary to manage and oversee the successful completion of transformational or strategic project initiatives. These initiatives often place significant demands on management and a limited number of employees with subject matter expertise and may involve significant costs to implement, as well as increase operational risk as we develop and implement related controls and procedures and employees learn to process transactions and operate under new systems, controls and procedures. The failure to properly execute on these transformational or strategic initiatives could adversely impact our business, reputation and results of operations.

Legal, regulatory and reputational risks may also exist in connection with dealing with new products or markets, or clients and customers whose businesses focus on such products or markets, where there is regulatory uncertainty or different or conflicting regulations depending on the regulator or the jurisdiction. We may invest significant time and resources into the expansion of existing or creation of new compliance and risk management systems with respect to new products or markets.

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

The businesses in which we operate are intensely competitive around the world. Larger and more geographically diverse companies, and financial technology firms that invest substantial resources in developing and designing new technology and that are not subject to the same level of regulation, may be able to offer financial products and services at more competitive prices than we are able to offer. We have also experienced, and anticipate that we will continue to experience, pricing pressure in many of our businesses, particularly our Asset Servicing business due to trends in the market for custodial services and the considerable market influence exerted by clients in that business. Pricing pressures, as a result of the willingness of competitors to offer comparable or improved products or services at a lower price, may result in a reduction in the price we can charge for our products and services, which could, and in some cases has, negatively affected our ability to maintain or increase our profitability.

In addition, technological advances have made it possible for other types of non-depository institutions, such as financial technology firms, outsourcing companies and data processing companies, to offer a variety of products and services competitive with certain areas of our business, including with respect to our clearing, settlement, payments and trading activities. In the future, financial technology firms may be able to provide traditional banking products and services by obtaining a bank-like charter, such as the OCC's fintech charter, or offer cryptocurrencies.

Moreover, new or disruptive technologies may quickly impact markets, and the manner in which our clients interact and transact within markets. For example, the emergence, adoption and evolution of new technologies that do not require intermediation, including distributed ledgers, as well as advances in robotic process automation, could significantly affect the competition for payments processing and other financial services. Our failure to either anticipate, or participate in, the transformational change within a given market or adapt these technologies as successfully as our peers, could make us less competitive and result in potential negative financial impact. Increased competition in any of these areas may require us to make additional capital investments in our businesses in order to remain competitive.

Furthermore, regulations could impact our ability to conduct certain of our businesses in a cost-effective manner or at all. The more restrictive laws and regulations applicable to the largest U.S. financial services institutions, including the U.S. capital rules, can put us at a competitive disadvantage relative to both our non-U.S. competitors and U.S. competitors not subject to the same laws and regulations. See "Supervision and Regulation."

Our strategic transactions present risks and uncertainties and could have an adverse effect on our business, financial condition and results of operations.

From time to time, to achieve our strategic objectives, we have acquired, disposed of, or invested in (including through joint venture relationships) companies and businesses and have entered into strategic alliances or other collaborations with third-party service providers to deliver products and services to clients, and may do so in the future. Our ability to pursue or complete strategic transactions is in certain instances subject to regulatory approval and we cannot be certain when or if, or on what terms and conditions, any required regulatory approvals would be granted. Moreover, to the extent we pursue a strategic transaction, there can be no guarantee that the transaction will close when anticipated, or at all. If a strategic transaction does not close, or if the strategic transaction fails to maximize shareholder value or required regulatory approval is not obtained, it could have an adverse effect on our business, financial condition and results of operations.

Each acquisition poses integration challenges, including successfully retaining and assimilating clients and key employees, capitalizing on certain revenue synergies and integrating the acquired company's employees, culture, control functions, systems and technology. In some cases, acquisitions involve entry into new businesses or new geographic or other markets, and these situations also present risks and uncertainties in instances where we may be inexperienced in these new areas. We may be required to spend a significant amount of time and resources to integrate these acquisitions. The anticipated integration benefits may take longer to achieve than projected and the time and cost needed to consolidate control functions, platforms and systems may significantly exceed our estimates. If we fail to successfully integrate strategic acquisitions, including doing so in a timely and cost-effective manner, we may not realize the expected benefits, which could have an adverse impact on our business, financial condition and results of operations. In addition, we may incur expenses, costs, losses, penalties, taxes and other liabilities related to the conduct of the acquired businesses prior to the date of our ownership (including in connection with the defense and/or settlement of legal and regulatory claims, investigations and proceedings) which may not be recoverable through indemnification or otherwise. If the purchase price we pay in an acquisition exceeds the fair value of assets acquired less the liabilities we assume, then we may need to recognize goodwill on our consolidated balance sheet. Goodwill is an intangible asset that is not eligible for inclusion in regulatory capital under applicable requirements. Further, if the value of the acquisition declines, we may be required to record an impairment charge.

Each disposition also poses challenges, including separating the disposed businesses, products and systems in a way that is cost-effective and is not disruptive to us or our customers. The inherent uncertainty involved in the process of evaluating, negotiating or executing a potential sale of one of our companies or businesses may cause the loss of key clients, employees, vendors and other business partners, which could have an adverse impact on our business, financial condition and results of operations. In addition, a portion of the purchase price we expect to receive in a disposition may be contingent or based on an earnout (e.g., dependent on the profitability or results of operation of the business over a period of time after the sale is completed). In such cases, we may not realize all, or any, contingent or earnout payments we anticipate receiving if the future performance of the business does not meet our expectations or if other contingent payment conditions are not satisfied.

Joint ventures, non-controlling investments, strategic alliances and other collaborations contain potentially increased financial, legal, reputational, operational, regulatory and/or compliance risks. We may be dependent on joint venture partners, firms with which we collaborate, controlling shareholders or management who may have business interests, strategies or goals that are inconsistent with ours. Such dependencies, particularly in the case of establishing de novo joint ventures, may delay the launch of a new venture and result in the loss of a market opportunity. Business decisions or other actions or omissions of the joint venture partner, the firms with which we collaborate, controlling shareholders or management may adversely affect the value of our investment (or, in the case of strategic alliances or other collaborations, the value of our products or services), impact our results of operations, result in litigation or regulatory action against us and otherwise damage our reputation and brand.

Additional Risks

Our businesses may be negatively affected by adverse events, publicity, government scrutiny or other reputational harm.

We are subject to reputational, legal, compliance and regulatory risk in the ordinary course of our business. Harm to our reputation can result from numerous sources, including adverse publicity or negative information, whether or not true, arising from events occurring at BNY Mellon, other financial institutions or in the financial markets, perceived failure to comply with legal and regulatory requirements or deliver appropriate standards of service and quality, or a failure to appropriately describe our products and services, how we address social and sustainability concerns in our business activities or in our relationships with clients, the purported actions of our employees or the use of social media by our employees, alleged financial reporting irregularities involving ourselves or other large and well-known companies and perceived conflicts of interest. For example, a cybersecurity event impacting us or our customers' data could have a negative impact on our reputation and customer confidence in BNY Mellon and our cybersecurity defenses and business continuity and resiliency capabilities. Our reputation could also be harmed by the failure of an affiliate, joint venture or a vendor or other third party with which we do business to comply with laws or regulations. Our reputation may be significantly damaged by adverse publicity or negative information regarding BNY Mellon, whether or not true, that may be published or broadcast by the media or posted on social media, non-mainstream news services or other internet forums. The speed and pervasiveness with which information can be disseminated through these channels, in particular social media, may magnify risks relating to negative publicity. Damage to our reputation could affect the confidence of clients, rating agencies, regulators, employees, stockholders and other stakeholders and could in turn have an impact on our business and results of operations.

Additionally, governmental scrutiny from regulators, tax authorities, legislative bodies and law enforcement agencies with respect to financial services companies has remained at elevated levels. Press coverage and other public statements, including information posted on social media or other internet forums, that allege some form of wrongdoing (including, in some cases, press coverage and public statements that do not directly involve BNY Mellon) often result in some type of investigation or in lawsuits. Certain enforcement authorities have recently required admissions of wrongdoing, and in some cases, criminal pleas, as part of the resolution of matters brought by them against financial institutions. Any such resolution of a matter involving BNY Mellon could lead to increased exposure to civil litigation, could adversely affect our reputation and ability to do business in certain products and in certain jurisdictions and could have other negative effects.

Climate change concerns could adversely affect our business, affect client activity levels and damage our reputation.

Climate change represents a key risk driver that may have significant impacts on the global economy, the finance sector and the diverse network of our stakeholders over the short, medium and long term. Such concerns have led and are likely to continue to lead to governmental efforts around the world to mitigate the impacts of climate change. Consumers and businesses are also changing their behavior and business preferences as a result of these concerns. New governmental regulations or guidance relating to climate change, as well as changes in consumers' and businesses' behaviors and business preferences, may affect whether and on what terms and conditions we will engage in certain activities or offer certain products or services. The governmental and supervisory focus on climate change could also result in our becoming subject to new or heightened regulatory requirements relating to climate change, such as requirements relating to operational resiliency or stress testing for various climate stress scenarios, or additional, potentially costly, reporting requirements. Any such new or heightened requirements could result in increased regulatory, compliance or other costs or higher capital requirements, and may subject us to different and potentially conflicting requirements in the various jurisdictions in which we operate. In connection with the targeted transition to a lower carbon economy, legislative or public policy changes and changes in consumer sentiment could negatively impact the businesses and financial condition of our clients, which may decrease revenues from those clients and increase the credit risk associated with loans and other credit exposures to those clients. In addition, our reputation may be damaged as a result of our involvement, or our clients' involvement, in certain

industries or projects associated with climate change and we could face pressure from the public sector, individuals or other groups to cease doing business in such industries or projects. At the same time, certain financial institutions have also been subject to criticism and other negative publicity as a result of their decisions to reduce their involvement in certain industries or projects perceived to be associated with climate change. Our business, reputation and ability to attract and retain employees may also be harmed if our response to climate change is perceived to be ineffective, insufficient or otherwise inappropriate.

Impacts from natural disasters, climate change, acts of terrorism, pandemics, global conflicts and other geopolitical events may have a negative impact on our business and operations.

In conducting our business and maintaining and supporting our global operations, which includes clients, counterparties, vendors and other third parties, we are subject to risks of loss from the outbreak of war, escalation of hostilities, acts of terrorism, natural disasters, climate change, pandemics (including the further spread of SARS-CoV-2 or its variants), global conflicts or other similar catastrophic events that could have a negative impact on our business and operations. We may also be impacted by unfavorable political, economic, legal or other developments, including but not limited to social or political instability, changes in governmental policies or policies of central banks, sanctions, expropriation, nationalization, confiscation of assets, price, capital and exchange controls, the imposition of tariffs or other limitations on international trade and travel, and changes in laws and regulations.

For example, as a result of Russia's invasion of Ukraine in the first quarter of 2022, we ceased originating new banking business in Russia and suspended investment management purchases of Russian securities. An escalation of hostilities, or the imposition of additional sanctions or other laws prohibiting or limiting operations in certain jurisdictions, as a result of the conflict in Ukraine or conflicts in other regions could lead to unexpected disruptions to our businesses and could adversely affect the global economy and financial markets generally, diminish levels of economic activity and increase volatility in commodity prices, credit and capital markets. The extent and duration of any such military action, and the responses to such action by governments, central banks and the markets, may magnify the impact of other risks described in this section.

While we have business continuity and disaster recovery plans in place, such events could still damage our facilities, disrupt or delay normal business operations (including communications, technology and physical access to our facilities), result in harm or cause travel limitations on our employees, with a similar impact on our clients, suppliers and counterparties. Notwithstanding our efforts to maintain business continuity and disaster recovery plans, to the extent a catastrophic event occurs and our remote work arrangements fail or are otherwise impaired, our ability to service and interact with our clients may suffer. If we are unable to implement and maintain remote work arrangements, including, for example, because of an internal or external failure of our information technology infrastructure or increased rates of employee illness or unavailability, our business continuity status would be adversely impacted and there would be a disruption to our businesses.

Catastrophic events, including those caused by climate change, could also negatively impact the purchase of our products and services if those events result in reduced capital markets activity, lower asset price levels, or disruptions in general economic activity, or in financial market settlement functions, which could negatively impact our business and results of operations. In addition, such catastrophic events may lead, and in some cases have led, to higher market volatility, as well as an increase in delinquencies, bankruptcies or defaults that could result in our experiencing higher levels of non-performing assets, net charge-offs and provisions for credit losses, negatively impacting our business and operations. Furthermore, we invest in renewable energy projects, which have been and may in the future be adversely affected by extreme weather events, natural disasters and other catastrophic events.

Tax law changes or challenges to our tax positions with respect to historical transactions may adversely affect our net income, effective tax rate and our overall results of operations and financial condition.

In the course of our business, we receive inquiries and challenges from both U.S. and non-U.S. tax authorities on the amount of taxes we owe. If we are not successful in defending these inquiries and challenges, we may be required to adjust the timing

or amount of taxable income or deductions or the allocation of income among tax jurisdictions, all of which can require a greater provision for taxes or otherwise negatively affect earnings. Probabilities and outcomes are reviewed as events unfold, and adjustments to the reserves are made when necessary, but the reserves may prove inadequate because we cannot necessarily accurately predict the outcome of any challenge, settlement or litigation or the extent to which it will negatively affect us or our business. Future tax laws or the expiration of or changes in existing tax laws, or the interpretation of those laws worldwide, could also have a material impact on our business or net income. Our actions taken in response to, or reliance upon, such changes in the tax laws may impact our tax position in a manner that may result in lower earnings. In addition, upon any change in tax law, we must recognize the effect of the change on our deferred tax assets and liabilities. An increase in the U.S. tax rate would likely result in an increase in our net deferred tax liabilities and a reduction in our net income in the period of enactment of the change. In addition, changes in tax rates or tax law could also impact the method and amount of capital that we return to shareholders. See Note 12 of the Notes to Consolidated Financial Statements for further information.

Changes in accounting standards governing the preparation of our financial statements and future events could have a material impact on our reported financial condition, results of operations, cash flows and other financial data.

From time to time, the Financial Accounting Standards Board ("FASB"), the SEC and bank regulators change the financial accounting and reporting standards governing the preparation of our financial statements or the interpretation of those standards. These changes are difficult to predict and can materially impact how we record and report our financial condition, results of operations, cash flows and other financial data. In some cases, the FASB, the SEC and bank regulators may change financial accounting and reporting standards governing the preparation of our financial statements or the interpretation of those standards that may require us to apply a new or revised standard retrospectively, potentially resulting in the restatement of our prior period financial statements and our related disclosures.

Additionally, our accounting policies and methods are fundamental to how we record and report our financial condition and results of operations. The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates based upon assumptions and use judgments about future economic and market conditions which affect reported amounts and related disclosures in our financial statements. Amounts subject to estimates are items such as the allowance for credit losses, goodwill and other intangibles and litigation and regulatory contingencies. Among other effects, such changes in estimates could result in further impairments of goodwill and intangible assets and establishment of allowances for credit losses as well as litigation and regulatory contingencies. In performing our annual and interim goodwill impairment tests, we may use an income approach to estimate the fair values of each reporting unit. Estimated cash flows used in the income approach are based on management's projections. Estimated cash flows extend far into the future, and, by their nature, are difficult to estimate over such an extended time frame. Factors that may significantly affect the cash flow estimates include, among others, market values of assets we manage, the level and mix of those assets, customer behaviors and attrition, operating margins, changes in revenue growth trends, certain money market fee waiver practices, cost structures and technology, regulatory and legislative changes, specific industry or market sector conditions, competition and changes in interest rates. In the future, small changes in the assumptions, such as changes in the cash flow estimates, discount rate or long-term growth rate, or a prolonged macroeconomic downturn may produce a material non-cash goodwill impairment. If actual or subsequent events occur that are materially different than the assumptions, judgments and estimates we used, our results of operation may be materially and negatively impacted.

Recently issued accounting standards

The following accounting guidance issued by FASB has not yet been adopted as of Dec. 31, 2022.

Accounting Standards Update ("ASU") 2022-01, Derivatives and Hedging (Topic 815): Fair Value Hedging – Portfolio Layer Method

In March 2022, the FASB issued ASU 2022-01, *Derivatives and Hedging (Topic 815): Fair Value Hedging – Portfolio Layer Method*, which provides guidance that expands the ability to hedge interest rate risk by permitting the use of multiple hedged layers of a single closed portfolio of assets and will (1) Allow multiple layer hedging within the same closed portfolio, (2) Expand the scope of the portfolio layer method to include non-prepayable assets, (3) Expand the eligible hedging instruments to be utilized in a single-layer hedge, and (4) Permit held-to-maturity debt securities to be transferred to available-for-sale at the date of adoption, provided such transferred securities are designated in a portfolio layer method hedge within 30 days of the adoption date.

The standard also provides further guidance and disclosure requirements with respect to hedge basis adjustments related to portfolio layer method hedges.

We will consider utilizing the updated guidance in future hedging strategies. This ASU was effective Jan. 1, 2023.

ASU 2022-02, Financial Instruments – Credit Losses (Topic 326): Troubled Debt Restructurings and Vintage Disclosures

In March 2022, the FASB issued ASU 2022-02, *Financial Instruments – Credit Losses (Topic 326): Troubled Debt Restructurings and Vintage Disclosures*, which provides post-implementation guidance related to the adoption of ASU 2016-13, *Financial Instruments – Credit Losses: Measurement of Credit Losses on Financial Instruments*, which was effective Jan. 1, 2020. This ASU amends the guidance related to two issues: Troubled Debt Restructurings ("TDRs") and disclosure requirements for the credit profile of the loan portfolio. This ASU eliminates the accounting guidance for TDRs by creditors, while enhancing disclosure requirements for certain loan refinancings and restructurings by creditors when a borrower is experiencing financial difficulty. An entity must apply the loan refinancing and restructuring guidance to determine whether a modification results in a new loan or a continuation of an existing loan.

This ASU also requires that an entity disclose current-period gross write-offs by year of origination for financing receivables and net investments in leases within the scope of Subtopic 326-20, Financial Instruments – Credit Losses – Measured at Amortized Cost.

We do not expect the impact of the revised guidance on accounting for loan modification to be material and will apply the updated disclosure requirements in the first quarter 2023. The ASU was effective Jan. 1, 2023.

Explanation of GAAP and Non-GAAP financial measures

BNY Mellon has included in this Annual Report certain Non-GAAP financial measures on a tangible basis as a supplement to GAAP information, which exclude goodwill and intangible assets, net of deferred tax liabilities. We believe that the return on tangible common equity – Non-GAAP is additional useful information for investors because it presents a measure of those assets that can generate income, and the tangible book value per common share – Non-GAAP is additional useful information because it presents the level of tangible assets in relation to shares of common stock outstanding.

BNY Mellon has presented revenue measures excluding notable items, including a net loss from repositioning the securities portfolio, disposal gains and losses and the accelerated amortization of deferred costs for depositary receipts related to Russia. Expense measures, excluding notable items, including goodwill impairment, severance expense, litigation reserves and real estate charges, are also presented. Litigation reserves represent accruals for loss contingencies that are both probable and reasonably estimable, but exclude standard business-related legal fees. Income before taxes, net income applicable to common shareholders of The Bank of New York Mellon Corporation, diluted earnings per share, operating leverage, return on common equity, return on tangible common equity, pre-tax operating margin and the effective tax rate, excluding the notable items mentioned above, are also provided. These measures have been provided to permit investors to view the financial measures on a basis consistent with how management views the businesses.

The presentation of the growth rates of investment management and performance fees on a constant currency basis permits investors to assess the significance of changes in foreign currency exchange rates. Growth rates on a constant currency basis were determined by applying the current period foreign currency exchange rates to the prior period revenue. We believe that this presentation, as a supplement to GAAP information, gives investors a clearer picture of the related revenue results without the variability caused by fluctuations in foreign currency exchange rates.

BNY Mellon has also included the adjusted pre-tax operating margin – Non-GAAP, which is the pre-tax operating margin for the Investment and Wealth Management business segment, net of distribution and servicing expense that was passed to third parties who distribute or service our managed funds. We believe that this measure is useful when evaluating the performance of the Investment and Wealth Management business segment relative to industry competitors.

Reconciliation of Non-GAAP measures, excluding notable items *(dollars in millions)*		**2022**	2021	**2022 vs. 2021**
Fee revenue – GAAP	**$**	**12,955**	$ 12,977	**— %**
Impact of notable items *(a)*		**(88)**	—	
Adjusted fee revenue – Non-GAAP	**$**	**13,043**	$ 12,977	**1 %**
Total revenue – GAAP	**$**	**16,377**	$ 15,931	**3 %**
Impact of notable items *(a)*		**(511)**	13	
Adjusted total revenue – Non-GAAP	**$**	**16,888**	$ 15,918	**6 %**
Total noninterest expense – GAAP	**$**	**13,010**	$ 11,514	**13 %**
Impact of notable items *(a)*		**1,029**	129	
Adjusted total noninterest expense – Non-GAAP	**$**	**11,981**	$ 11,385	**5 %**
Net income applicable to common shareholders of The Bank of New York Mellon Corporation – GAAP	**$**	**2,362**	$ 3,552	**(34)%**
Impact of notable items *(a)*		**(1,378)**	(85)	
Adjusted net income applicable to common shareholders of The Bank of New York Mellon Corporation – Non-GAAP	**$**	**3,740**	$ 3,637	**3 %**
Diluted earnings per share – GAAP	**$**	**2.90**	$ 4.14	**(30)%**
Impact of notable items *(a)*		**(1.69)**	(0.10)	
Adjusted diluted earnings per share – Non-GAAP	**$**	**4.59**	$ 4.24	**8 %**

(a) Notable items in 2022 include the goodwill impairment, the net loss from repositioning the securities portfolio, severance expense, litigation reserves, the accelerated amortization of deferred costs for depositary receipts services related to Russia and net gains on disposals (reflected in investment and other revenue). Notable items in 2021 include litigation reserves, severance expense and gains on disposals (reflected in investment and other revenue).

The following table presents the reconciliation of noninterest expense growth rates.

Noninterest expense reconciliation *(dollars in millions)*		2021	2020	2021 vs. 2020
Noninterest expense – GAAP	$	11,514	$ 11,004	5 %
Impact of notable items *(a)*		129	165	
Adjusted total noninterest expense – Non-GAAP	$	11,385	$ 10,839	5 %

(a) Notable items in 2021 include litigation reserves and severance expense. Notable items in 2020 include litigation reserves, severance expense and real estate charges recorded in the fourth quarter of 2020.

The following table presents the reconciliation of the pre-tax operating margin.

Pre-tax operating margin reconciliation *(dollars in millions)*		**2022**	2021
Income before taxes – GAAP	**$**	**3,328**	$ 4,648
Impact of notable items *(a)*		**(1,540)**	(116)
Adjusted income before taxes, excluding notable items – Non-GAAP	**$**	**4,868**	$ 4,764
Total revenue – GAAP	**$**	**16,377**	$ 15,931
Impact of notable items *(a)*		**(511)**	13
Adjusted total revenue, excluding notable items – Non-GAAP	**$**	**16,888**	$ 15,918
Pre-tax operating margin – GAAP *(b)*		**20 %**	29 %
Adjusted pre-tax operating margin – Non-GAAP *(b)*		**29 %**	30 %

(a) Notable items in 2022 include the goodwill impairment, the net loss from repositioning the securities portfolio, severance expense, litigation reserves, the accelerated amortization of deferred costs for depositary receipts services related to Russia and net gains on disposals (reflected in investment and other revenue). Notable items in 2021 include litigation reserves, severance expense and gains on disposals (reflected in investment and other revenue).

(b) Income before taxes divided by total revenue.

The following table presents the reconciliation of effective tax rate.

Effective tax rate reconciliation *(dollars in millions)*		**2022**
Provision for income taxes	**$**	**768**
Impact of notable items *(a)*		**(162)**
Adjusted provision for income taxes, excluding notable items – Non-GAAP	**$**	**930**
Income before taxes – GAAP	**$**	**3,328**
Impact of notable items *(a)*		**(1,540)**
Adjusted income before taxes, excluding notable items – Non-GAAP	**$**	**4,868**
Effective tax rate – GAAP		**23.1 %**
Adjusted effective tax rate – Non-GAAP		**19.1 %**

(a) Notable items in 2022 include the goodwill impairment, the net loss from repositioning the securities portfolio, severance expense, litigation reserves, the accelerated amortization of deferred costs for depositary receipts services related to Russia and net gains on disposals (reflected in investment and other revenue).

The following table presents the reconciliation of the return on common equity and tangible common equity.

Return on common equity and tangible common equity reconciliation *(dollars in millions)*		**2022**		2021		2020
Net income applicable to common shareholders of The Bank of New York Mellon Corporation – GAAP	**$**	**2,362**	$	3,552	$	3,423
Add: Amortization of intangible assets		**67**		82		104
Less: Tax impact of amortization of intangible assets		**16**		20		25
Adjusted net income applicable to common shareholders of The Bank of New York Mellon Corporation, excluding amortization of intangible assets – Non-GAAP	**$**	**2,413**	$	3,614	$	3,502
Impact of notable items *(a)*		**(1,378)**		(85)		
Adjusted net income applicable to common shareholders of The Bank of New York Mellon Corporation, excluding amortization of intangible assets and notable items – Non-GAAP	**$**	**3,791**	$	3,699		
Average common shareholders' equity	**$**	**36,175**	$	39,695	$	39,200
Less: Average goodwill		**17,060**		17,492		17,331
Average intangible assets		**2,939**		2,979		3,051
Add: Deferred tax liability – tax deductible goodwill		**1,181**		1,178		1,144
Deferred tax liability – intangible assets		**660**		676		667
Average tangible common shareholders' equity – Non-GAAP	**$**	**18,017**	$	21,078	$	20,629
Return on common shareholders' equity – GAAP		**6.5 %**		8.9 %		8.7 %
Adjusted return on common shareholders' equity – Non-GAAP		**10.3 %**		9.2 %		
Return on tangible common shareholders' equity – Non-GAAP		**13.4 %**		17.1 %		17.0 %
Adjusted return on tangible common shareholders' equity – Non-GAAP		**21.0 %**		17.6 %		

(a) Notable items in 2022 include the goodwill impairment, the net loss from repositioning the securities portfolio, severance expense, litigation reserves, the accelerated amortization of deferred costs for depositary receipts services related to Russia and net gains on disposals (reflected in investment and other revenue). Notable items in 2021 include litigation reserves, severance expense and gains on disposals (reflected in investment and other revenue).

The following table presents the reconciliation of book value and tangible book value per common share.

Book value and tangible book value per common share reconciliation		Dec. 31,		
(dollars in millions, except per share amounts and unless otherwise noted)		**2022**	2021	2020
BNY Mellon shareholders' equity at year end – GAAP	**$**	**40,734**	$ 43,034	$ 45,801
Less: Preferred stock		**4,838**	4,838	4,541
BNY Mellon common shareholders' equity at year end – GAAP		**35,896**	38,196	41,260
Less: Goodwill		**16,150**	17,512	17,496
Intangible assets		**2,901**	2,991	3,012
Add: Deferred tax liability – tax deductible goodwill		**1,181**	1,178	1,144
Deferred tax liability – intangible assets		**660**	676	667
BNY Mellon tangible common shareholders' equity at year end – Non-GAAP	**$**	**18,686**	$ 19,547	$ 22,563
Year-end common shares outstanding *(in thousands)*		**808,445**	804,145	886,764
Book value per common share – GAAP	**$**	**44.40**	$ 47.50	$ 46.53
Tangible book value per common share – Non-GAAP	**$**	**23.11**	$ 24.31	$ 25.44

The following table presents the impact of changes in foreign currency exchange rates on our consolidated investment management and performance fees.

Constant currency reconciliation – Consolidated				**2022 vs.**
(dollars in millions)		**2022**	2021	**2021**
Investment management and performance fees – GAAP	**$**	**3,299**	$ 3,588	**(8)%**
Impact of changes in foreign currency exchange rates		**—**	(135)	
Adjusted investment management and performance fees – Non-GAAP	**$**	**3,299**	$ 3,453	**(4)%**

The following table presents the impact of changes in foreign currency exchange rates on investment management and performance fees reported in the Investment and Wealth Management business segment.

Constant currency reconciliation – Investment and Wealth Management business segment				**2022 vs.**
(dollars in millions)		**2022**	2021	**2021**
Investment management and performance fees – GAAP	**$**	**3,290**	$ 3,590	**(8)%**
Impact of changes in foreign currency exchange rates		**—**	(135)	
Adjusted investment management and performance fees – Non-GAAP	**$**	**3,290**	$ 3,455	**(5)%**

The following table presents the reconciliation of the pre-tax operating margin for the Investment and Wealth Management business segment.

Pre-tax operating margin reconciliation – Investment and Wealth Management business segment				**2022 vs.**
(dollars in millions)	**2022**	2021	2020	**2021**
Income before income taxes – GAAP	**$ 48**	$ 1,230	$ 971	**(96)%**
Impact of notable items *(a)*	**(709)**	(5)		
Adjusted income before income taxes – Non-GAAP	**$ 757**	$ 1,235		**(39)%**
Total revenue – GAAP	**$ 3,550**	$ 4,042	$ 3,692	
Less: Distribution and servicing expense	**345**	300	338	
Adjusted total revenue, net of distribution and servicing expense – Non-GAAP	**$ 3,205**	$ 3,742	$ 3,354	
Pre-tax operating margin – GAAP *(b)*	**1 %**	30 %	26 %	
Adjusted pre-tax operating margin, net of distribution and servicing expense – Non-GAAP *(b)*	**2 %**	33 %	29 %	
Adjusted pre-tax operating margin, net of distribution and servicing expense and excluding notable items – Non-GAAP *(b)*	**24 %**			

(a) Notable items in 2022 include the goodwill impairment, severance expense, losses on disposals (reflected in investment and other revenue) and litigation reserves. Notable items in 2021 include litigation reserves, losses on disposals (reflected in investment and other revenue) and severance expense.

(b) Income before taxes divided by total revenue.

Rate/volume analysis

Rate/volume analysis *(a)*	**2022 over (under) 2021**			2021 over (under) 2020		
	Due to change in			Due to change in		
(in millions)	**Average balance**	**Average rate**	**Net change**	Average balance	Average rate	Net change
Interest revenue						
Interest-earning assets:						
Interest-bearing deposits with the Federal Reserve and other central banks:						
Domestic offices	**$ (1)**	**$ 751**	**$ 750**	$ 5	$ (66)	$ (61)
Foreign offices	**25**	**321**	**346**	(29)	(37)	(66)
Total interest-bearing deposits with the Federal Reserve and other central banks	**24**	**1,072**	**1,096**	(24)	(103)	(127)
Interest-bearing deposits with banks	**(11)**	**184**	**173**	10	(96)	(86)
Federal funds sold and securities purchased under resale agreements	**(17)**	**1,097**	**1,080**	(37)	(388)	(425)
Loans:						
Domestic offices	**137**	**849**	**986**	205	(255)	(50)
Foreign offices	**(7)**	**62**	**55**	(76)	(58)	(134)
Total loans	**130**	**911**	**1,041**	129	(313)	(184)
Securities:						
U.S. government obligations	**54**	**292**	**346**	64	(81)	(17)
U.S. government agency obligations	**(125)**	**297**	**172**	(49)	(294)	(343)
State and political subdivisions *(b)*	**(17)**	**6**	**(11)**	26	(8)	18
Other securities:						
Domestic offices *(b)*	**—**	**253**	**253**	55	(22)	33
Foreign offices	**(18)**	**49**	**31**	6	(95)	(89)
Total other securities *(b)*	**(18)**	**302**	**284**	61	(117)	(56)
Total investment securities *(b)*	**(106)**	**897**	**791**	102	(500)	(398)
Trading securities (primarily domestic) *(b)*	**(14)**	**104**	**90**	(5)	(35)	(40)
Total securities *(b)*	**(120)**	**1,001**	**881**	97	(535)	(438)
Total interest revenue *(b)*	**$ 6**	**$ 4,265**	**$ 4,271**	$ 175	$ (1,435)	$ (1,260)
Interest expense						
Interest-bearing liabilities:						
Interest-bearing deposits:						
Domestic offices	**$ 2**	**$ 1,005**	**$ 1,007**	$ 26	$ (229)	$ (203)
Foreign offices	**12**	**743**	**755**	(1)	(132)	(133)
Total interest-bearing deposits	**14**	**1,748**	**1,762**	25	(361)	(336)
Federal funds purchased and securities sold under repurchase agreements	**1**	**937**	**938**	(21)	(266)	(287)
Trading liabilities	**3**	**57**	**60**	2	(9)	(7)
Other borrowed funds:						
Domestic offices	**—**	**2**	**2**	(16)	6	(10)
Foreign offices	**1**	**(2)**	**(1)**	—	2	2
Total other borrowed funds	**1**	**—**	**1**	(16)	8	(8)
Commercial paper	**—**	**—**	**—**	(4)	(3)	(7)
Payables to customers and broker-dealers	**—**	**158**	**158**	(1)	(29)	(30)
Long-term debt	**26**	**442**	**468**	(24)	(206)	(230)
Total interest expense	**$ 45**	**$ 3,342**	**$ 3,387**	$ (39)	$ (866)	$ (905)
Changes in net interest revenue *(b)*	**$ (39)**	**$ 923**	**$ 884**	$ 214	$ (569)	$ (355)

(a) Changes which are solely due to balance changes or rate changes are allocated to such categories on the basis of the respective percentage changes in average balances and average rates. Changes in interest revenue or interest expense arising from the combination of rate and volume variances are allocated proportionately to rate and volume based on their relative absolute magnitudes.

(b) Presented on an FTE basis.

Some statements in this Annual Report are forward-looking. These include statements about the usefulness of Non-GAAP measures, the future results of BNY Mellon, our businesses, financial, liquidity and capital condition, results of operations, liquidity, risk and capital management and processes, goals, strategies, outlook, objectives, expectations (including those regarding our performance results, expenses, nonperforming assets, products, impacts of currency fluctuations, impacts of securities portfolio repositioning, impacts of trends on our businesses, regulatory, technology, market, economic or accounting developments and the impacts of such developments on our businesses, legal proceedings and other contingencies), human capital management (including related ambitions, objectives, aims and goals), effective tax rate, net interest revenue, estimates (including those regarding expenses, losses inherent in our credit portfolios and capital ratios), intentions (including those regarding our capital returns and expenses, including our investments in technology and pension expense), targets, opportunities, potential actions, growth and initiatives, including the potential effects of the coronavirus pandemic on any of the foregoing.

In this report, any other report, any press release or any written or oral statement that BNY Mellon or its executives may make, words, such as "estimate," "forecast," "project," "anticipate," "likely," "target," "expect," "intend," "continue," "seek," "believe," "plan," "goal," "could," "should," "would," "may," "might," "will," "strategy," "synergies," "opportunities," "trends," "ambition," "objective," "aim," "future," "potentially," "outlook" and words of similar meaning, may signify forward-looking statements.

Actual results may differ materially from those expressed or implied as a result of a number of factors, including those discussed in "Risk Factors," such as:

- errors or delays in our operational and transaction processing, or those of third parties, may materially adversely affect our business, financial condition, results of operations and reputation;
- our risk management framework, models and processes may not be effective in identifying or mitigating risk and reducing the potential for losses;
- our business may be adversely affected if we are unable to attract, retain, develop and motivate employees;
- a communications or technology disruption or failure within our infrastructure or the infrastructure of third parties that results in a loss of information, delays our ability to access information or impacts our ability to provide services to our clients may materially adversely affect our business, financial condition and results of operations;
- a cybersecurity incident, or a failure in our computer systems, networks and information, or those of third parties, could result in the theft, loss, unauthorized access to, disclosure, use or alteration of information, system or network failures, or loss of access to information. Any such incident or failure could adversely impact our ability to conduct our businesses, damage our reputation and cause losses;
- we are subject to extensive government rulemaking, policies, regulation and supervision that impact our operations. Changes to and introduction of new rules and regulations have compelled, and in the future may compel, us to change how we manage our businesses, which could have a material adverse effect on our business, financial condition and results of operations;
- regulatory or enforcement actions or litigation could materially adversely affect our results of operations or harm our businesses or reputation;
- a failure or circumvention of our controls and procedures could have a material adverse effect on our business, financial condition, results of operations and reputation;
- we are dependent on fee-based business for a substantial majority of our revenue and our fee-based revenues could be adversely affected by slowing in market activity, weak financial markets, underperformance and/or negative trends in savings rates or in investment preferences;
- weakness and volatility in financial markets and the economy generally may materially adversely affect our business, financial condition and results of operations;
- levels of and changes in interest rates have impacted, and will in the future continue to impact, our profitability and capital levels, at times adversely;

- we have experienced, and may continue to experience, unrealized or realized losses on securities related to volatile and illiquid market conditions, reducing our capital levels and/or earnings;
- transitions away from and the replacement of LIBOR and other IBORs could adversely impact our business, financial condition and results of operations;
- the failure or perceived weakness of any of our significant clients or counterparties, many of whom are major financial institutions or sovereign entities, and our assumption of credit, counterparty and concentration risk, could expose us to loss and adversely affect our business;
- we could incur losses if our allowance for credit losses, including loan and lending-related commitment reserves, is inadequate or if our expectations of future economic conditions deteriorate;
- our business, financial condition and results of operations could be adversely affected if we do not effectively manage our liquidity;
- failure to satisfy regulatory standards, including "well capitalized" and "well managed" status or capital adequacy and liquidity rules more generally, could result in limitations on our activities and adversely affect our business and financial condition;
- the Parent is a non-operating holding company and, as a result, is dependent on dividends from its subsidiaries and extensions of credit from its IHC to meet its obligations, including with respect to its securities, and to provide funds for share repurchases and payment of dividends to its stockholders;
- our ability to return capital to shareholders is subject to the discretion of our Board of Directors and may be limited by U.S. banking laws and regulations, including those governing capital and capital planning, applicable provisions of Delaware law and our failure to pay full and timely dividends on our preferred stock;
- any material reduction in our credit ratings or the credit ratings of our principal bank subsidiaries, The Bank of New York Mellon or BNY Mellon, N.A., could increase the cost of funding and borrowing to us and our rated subsidiaries and have a material adverse effect on our business, financial condition and results of operations and on the value of the securities we issue;
- the application of our Title I preferred resolution strategy or resolution under the Title II orderly liquidation authority could adversely affect the Parent's liquidity and financial condition and the Parent's security holders;
- new lines of business, new products and services or transformational or strategic project initiatives subject us to new or additional risks, and the failure to implement these initiatives could affect our results of operations;
- we are subject to competition in all aspects of our business, which could negatively affect our ability to maintain or increase our profitability;
- our strategic transactions present risks and uncertainties and could have an adverse effect on our business, financial condition and results of operations;
- our businesses may be negatively affected by adverse events, publicity, government scrutiny or other reputational harm;
- climate change concerns could adversely affect our business, affect client activity levels and damage our reputation;
- impacts from natural disasters, climate change, acts of terrorism, pandemics, global conflicts and other geopolitical events may have a negative impact on our business and operations;
- tax law changes or challenges to our tax positions with respect to historical transactions may adversely affect our net income, effective tax rate and our overall results of operations and financial condition; and
- changes in accounting standards governing the preparation of our financial statements and future events could have a material impact on our reported financial condition, results of operations, cash flows and other financial data.

Investors should consider all risk factors discussed in the 2022 Annual Report and any subsequent reports filed with the SEC by BNY Mellon pursuant to the Exchange Act. All forward-looking statements speak only as of the date on which such statements are made, and BNY Mellon undertakes no obligation to update any statement to reflect events or circumstances after the date on which such forward-looking statement is made or to reflect the occurrence of unanticipated events. The contents of BNY Mellon's website or any other website referenced herein are not part of this report.

Assets under custody and/or administration ("AUC/A") – 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. The following types of assets under administration are not and historically have not been included in AUC/A: performance and risk analytics, transfer agency and asset aggregation services. To the extent that we provide more than one AUC/A service for a client's assets, the value of the asset is only counted once in the total amount of AUC/A.

Assets under management ("AUM") – Includes assets beneficially owned by our clients or customers which we hold in various capacities that are either actively or passively managed, as well as the value of hedges supporting customer liabilities. These assets and liabilities are not on our balance sheet.

CAMELS – An international bank-rating system where bank supervisory authorities rate institutions according to six factors. The six factors are Capital adequacy, Asset quality, Management quality, Earnings, Liquidity and Sensitivity to market risk.

Collateral management – A comprehensive program designed to simplify collateralization and expedite securities transfers for buyers and sellers.

Credit valuation adjustment ("CVA") – The market value of counterparty credit risk on OTC derivative transactions.

Debit valuation adjustment ("DVA") – The market value of our credit risk on OTC derivative transactions.

Depositary receipt – A negotiable security that generally represents a non-U.S. company's publicly traded equity.

Economic capital – The amount of capital required to absorb potential losses and reflects the probability of remaining solvent with a target debt rating over a one-year time horizon.

Global systemically important bank ("G-SIB") – 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.

High-quality liquid assets ("HQLA") – Unencumbered assets of the types identified in the U.S. LCR rule, which the U.S. banking agencies describe as able to be convertible into cash with little or no expected loss of value during a period of liquidity stress.

Investment grade – Represents Moody's long-term rating of Baa3 or better; and/or a Standard & Poor's, Fitch or DBRS long-term rating of BBB- or better; or if unrated, an equivalent rating using our internal risk ratings. Instruments that fall below these levels are considered to be non-investment grade.

Real estate investment trust ("REIT") – An investor-owned corporation, trust or association that sells shares to investors and invests in income-producing property.

Repurchase agreement ("Repo") – An instrument used to raise short-term funds whereby securities are sold with an agreement for the seller to buy back the securities at a later date.

Reverse repurchase agreement – The purchase of securities with the agreement to sell them at a higher price at a specific future date.

Sub-custodian – A local provider (e.g., a bank) contracted to provide specific custodial-related services in a selected country or geographic area.

Management of BNY Mellon is responsible for establishing and maintaining adequate internal control over financial reporting for BNY Mellon, as such term is defined in Rule 13a-15(f) under the Exchange Act.

BNY Mellon's management, including its principal executive officer and principal financial officer, has assessed the effectiveness of BNY Mellon's internal control over financial reporting as of December 31, 2022. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control – Integrated Framework (2013)*. Based upon such assessment, management believes that, as of December 31, 2022, BNY Mellon's internal control over financial reporting is effective based upon those criteria.

KPMG LLP, the independent registered public accounting firm that audited BNY Mellon's 2022 financial statements included in this Annual Report under "Financial Statements" and "Notes to Consolidated Financial Statements," has issued a report with respect to the effectiveness of BNY Mellon's internal control over financial reporting. This report begins on page 114.

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
The Bank of New York Mellon Corporation:

Opinion on Internal Control Over Financial Reporting

We have audited The Bank of New York Mellon Corporation and subsidiaries' (BNY Mellon) internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, BNY Mellon maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of BNY Mellon as of December 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, cash flows, and changes in equity for each of the years in the three-year period ended December 31, 2022, and the related notes (collectively, the consolidated financial statements), and our report dated February 27, 2023 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

BNY Mellon's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Report of Management on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on BNY Mellon'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 BNY Mellon in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG LLP

New York, New York
February 27, 2023

Consolidated Income Statement

(in millions)	Year ended Dec. 31, 2022	2021	2020
Fee and other revenue			
Investment services fees	**$ 8,529**	$ 8,284	$ 8,047
Investment management and performance fees	**3,299**	3,588	3,367
Foreign exchange revenue	**822**	799	774
Financing-related fees	**175**	194	212
Distribution and servicing fees	**130**	112	115
Total fee revenue	**12,955**	12,977	12,515
Investment and other revenue	**(82)**	336	316
Total fee and other revenue	**12,873**	13,313	12,831
Net interest revenue			
Interest revenue	**7,118**	2,845	4,109
Interest expense	**3,614**	227	1,132
Net interest revenue	**3,504**	2,618	2,977
Total revenue	**16,377**	15,931	15,808
Provision for credit losses	**39**	(231)	336
Noninterest expense			
Staff	**6,800**	6,337	5,966
Software and equipment	**1,657**	1,478	1,370
Professional, legal and other purchased services	**1,527**	1,459	1,403
Net occupancy	**514**	498	581
Sub-custodian and clearing	**485**	505	460
Distribution and servicing	**343**	298	336
Business development	**152**	107	105
Bank assessment charges	**126**	133	124
Goodwill impairment	**680**	—	—
Amortization of intangible assets	**67**	82	104
Other	**659**	617	555
Total noninterest expense	**13,010**	11,514	11,004
Income			
Income before income taxes	**3,328**	4,648	4,468
Provision for income taxes	**768**	877	842
Net income	**2,560**	3,771	3,626
Net loss (income) attributable to noncontrolling interests related to consolidated investment management funds	**13**	(12)	(9)
Net income applicable to shareholders of The Bank of New York Mellon Corporation	**2,573**	3,759	3,617
Preferred stock dividends	**(211)**	(207)	(194)
Net income applicable to common shareholders of The Bank of New York Mellon Corporation	**$ 2,362**	$ 3,552	$ 3,423

Consolidated Income Statement (continued)

Net income applicable to common shareholders of The Bank of New York Mellon Corporation used for the earnings per share calculation	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Net income applicable to common shareholders of The Bank of New York Mellon Corporation	**$ 2,362**	$ 3,552	$ 3,423
Less: Earnings allocated to participating securities	**—**	2	6
Net income applicable to common shareholders of The Bank of New York Mellon Corporation after required adjustment for the calculation of basic and diluted earnings per common share	**$ 2,362**	$ 3,550	$ 3,417

Average common shares and equivalents outstanding of The Bank of New York Mellon Corporation	Year ended Dec. 31,		
(in thousands)	**2022**	2021	2020
Basic	**811,068**	851,905	890,839
Common stock equivalents	**3,904**	4,900	2,425
Less: Participating securities	**(177)**	(446)	(750)
Diluted	**814,795**	856,359	892,514
Anti-dilutive securities *(a)*	**3,142**	642	4,968

(a) Represents stock options, restricted stock, restricted stock units and participating securities outstanding but not included in the computation of diluted average common shares because their effect would be anti-dilutive.

Earnings per share applicable to common shareholders of The Bank of New York Mellon Corporation	Year ended Dec. 31,		
(in dollars)	**2022**	2021	2020
Basic	**$ 2.91**	$ 4.17	$ 3.84
Diluted	**$ 2.90**	$ 4.14	$ 3.83

See accompanying Notes to Consolidated Financial Statements.

Consolidated Comprehensive Income Statement

(in millions)	Year ended Dec. 31, 2022	2021	2020
Net income	**$ 2,560**	$ 3,771	$ 3,626
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	**(603)**	(376)	508
Unrealized (loss) gain on assets available-for-sale:			
Unrealized (loss) gain arising during the period	**(3,245)**	(1,147)	1,202
Reclassification adjustment	**338**	(4)	(25)
Total unrealized (loss) gain on assets available-for-sale	**(2,907)**	(1,151)	1,177
Defined benefit plans:			
Net (loss) gain arising during the period	**(306)**	219	(107)
Amortization of prior service credit, net loss and initial obligation included in net periodic benefit cost	**56**	88	77
Total defined benefit plans	**(250)**	307	(30)
Net unrealized (loss) gain on cash flow hedges	**(6)**	(6)	5
Total other comprehensive (loss) income, net of tax *(a)*	**(3,766)**	(1,226)	1,660
Total comprehensive (loss) income	**(1,206)**	2,545	5,286
Net loss (income) attributable to noncontrolling interests	**13**	(12)	(9)
Other comprehensive loss (income) attributable to noncontrolling interests	**13**	(2)	(2)
Comprehensive (loss) income applicable to shareholders of The Bank of New York Mellon Corporation	**$ (1,180)**	$ 2,531	$ 5,275

(a) Other comprehensive (loss) income attributable to The Bank of New York Mellon Corporation shareholders was $(3,753) million for the year ended Dec. 31, 2022, $(1,228) million for the year ended Dec. 31, 2021 and $1,658 million for the year ended Dec. 31, 2020.

See accompanying Notes to Consolidated Financial Statements.

Consolidated Balance Sheet

(dollars in millions, except per share amounts)	Dec. 31, 2022	2021
Assets		
Cash and due from banks, net of allowance for credit losses of $29 and $3	**$ 5,030**	$ 6,061
Interest-bearing deposits with the Federal Reserve and other central banks	**91,655**	102,467
Interest-bearing deposits with banks, net of allowance for credit losses of $4 and $2 (includes restricted of $6,499 and $3,822)	**17,169**	16,630
Federal funds sold and securities purchased under resale agreements	**24,298**	29,607
Securities:		
Held-to-maturity, at amortized cost, net of allowance for credit losses of less than $1 and less than $1 (fair value of $49,992 and $56,775)	**56,194**	56,866
Available-for-sale, at fair value (amortized cost of $92,484 and $100,774, net of allowance for credit losses of $1 and $10)	**86,622**	101,839
Total securities	**142,816**	158,705
Trading assets	**9,908**	16,577
Loans	**66,063**	67,787
Allowance for credit losses	**(176)**	(196)
Net loans	**65,887**	67,591
Premises and equipment	**3,256**	3,431
Accrued interest receivable	**858**	457
Goodwill	**16,150**	17,512
Intangible assets	**2,901**	2,991
Other assets, net of allowance for credit losses on accounts receivable of $4 and $4 (includes $971 and $1,187, at fair value)	**25,855**	22,409
Total assets	**$ 405,783**	$ 444,438
Liabilities		
Deposits:		
Noninterest-bearing (principally U.S. offices)	**$ 78,017**	$ 93,695
Interest-bearing deposits in U.S. offices	**108,362**	120,903
Interest-bearing deposits in non-U.S. offices	**92,591**	105,096
Total deposits	**278,970**	319,694
Federal funds purchased and securities sold under repurchase agreements	**12,335**	11,566
Trading liabilities	**5,385**	5,469
Payables to customers and broker-dealers	**23,435**	25,150
Other borrowed funds	**397**	749
Accrued taxes and other expenses	**5,410**	5,767
Other liabilities (including allowance for credit losses on lending-related commitments of $78 and $45, also includes $221 and $496, at fair value)	**8,543**	6,721
Long-term debt	**30,458**	25,931
Total liabilities	**364,933**	401,047
Temporary equity		
Redeemable noncontrolling interests	**109**	161
Permanent equity		
Preferred stock – par value $0.01 per share; authorized 100,000,000 shares; issued 48,826 and 48,826 shares	**4,838**	4,838
Common stock – par value $0.01 per share; authorized 3,500,000,000 shares; issued 1,395,725,198 and 1,389,397,912 shares	**14**	14
Additional paid-in capital	**28,508**	28,128
Retained earnings	**37,864**	36,667
Accumulated other comprehensive loss, net of tax	**(5,966)**	(2,213)
Less: Treasury stock of 587,280,598 and 585,252,546 common shares, at cost	**(24,524)**	(24,400)
Total The Bank of New York Mellon Corporation shareholders' equity	**40,734**	43,034
Nonredeemable noncontrolling interests of consolidated investment management funds	**7**	196
Total permanent equity	**40,741**	43,230
Total liabilities, temporary equity and permanent equity	**$ 405,783**	$ 444,438

See accompanying Notes to Consolidated Financial Statements.

Consolidated Statement of Cash Flows

(in millions)	Year ended Dec. 31, 2022	2021	2020
Operating activities			
Net income	**$ 2,560**	$ 3,771	$ 3,626
Net loss (income) attributable to noncontrolling interests	**13**	(12)	(9)
Net income applicable to shareholders of The Bank of New York Mellon Corporation	**2,573**	3,759	3,617
Adjustments to reconcile net income to net cash provided by (used for) operating activities:			
Provision for credit losses	**39**	(231)	336
Pension plan contributions	**(7)**	(6)	(25)
Depreciation and amortization	**1,636**	1,867	1,630
Goodwill impairment	**680**	—	—
Deferred tax (benefit)	**155**	257	(193)
Net securities losses (gains)	**443**	(5)	(33)
Change in trading assets and liabilities	**7,015**	(1,898)	(496)
Change in accruals and other, net	**2,534**	(905)	202
Net cash provided by operating activities	**15,068**	2,838	5,038
Investing activities			
Change in interest-bearing deposits with banks	**1,540**	1,225	(1,393)
Change in interest-bearing deposits with the Federal Reserve and other central banks	**7,812**	35,073	(42,857)
Purchases of securities held-to-maturity	**(2,497)**	(8,921)	(29,651)
Paydowns of securities held-to-maturity	**7,168**	11,339	9,291
Maturities of securities held-to-maturity	**1,610**	1,872	7,097
Purchases of securities available-for-sale	**(32,336)**	(54,239)	(68,430)
Sales of securities available-for-sale	**14,990**	13,545	13,316
Paydowns of securities available-for-sale	**5,215**	12,775	10,476
Maturities of securities available-for-sale	**11,573**	17,221	27,592
Net change in loans	**1,423**	(11,350)	(1,271)
Sales of loans and other real estate	**—**	1	15
Change in federal funds sold and securities purchased under resale agreements	**5,294**	1,233	(708)
Net change in seed capital investments	**64**	171	18
Purchases of premises and equipment/capitalized software	**(1,346)**	(1,215)	(1,222)
Proceeds from the sale of premises and equipment	**45**	34	—
Acquisitions, net of cash	**—**	(170)	—
Dispositions, net of cash	**446**	8	—
Other, net	**(1,127)**	1,070	(728)
Net cash provided by (used for) investing activities	**19,874**	19,672	(78,455)
Financing activities			
Change in deposits	**(37,009)**	(17,896)	77,523
Change in federal funds purchased and securities sold under repurchase agreements	**790**	418	(361)
Change in payables to customers and broker-dealers	**(1,488)**	128	5,977
Change in other borrowed funds	**(344)**	397	(270)
Change in commercial paper	**—**	—	(3,959)
Net proceeds from the issuance of long-term debt	**9,929**	5,186	2,993
Repayments of long-term debt	**(4,000)**	(4,650)	(5,200)
Proceeds from the exercise of stock options	**9**	50	46
Issuance of common stock	**14**	13	12
Issuance of preferred stock	**—**	1,287	1,567
Treasury stock acquired	**(124)**	(4,567)	(989)
Preferred stock redemption	**—**	(1,000)	(583)
Common cash dividends paid	**(1,165)**	(1,126)	(1,117)
Preferred cash dividends paid	**(211)**	(197)	(179)
Amortization of preferred stock discount	**—**	10	15
Other, net	**(55)**	(15)	33
Net cash (used for) provided by financing activities	**(33,654)**	(21,962)	75,508
Effect of exchange rate changes on cash	**358**	(84)	61
Change in cash and due from banks and restricted cash			
Change in cash and due from banks and restricted cash	**1,646**	464	2,152
Cash and due from banks and restricted cash at beginning of period	**9,883**	9,419	7,267
Cash and due from banks and restricted cash at end of period	**$ 11,529**	$ 9,883	$ 9,419
Cash and due from banks and restricted cash			
Cash and due from banks at end of period (unrestricted cash)	**$ 5,030**	$ 6,061	$ 6,252
Restricted cash at end of period	**6,499**	3,822	3,167
Cash and due from banks and restricted cash at end of period	**$ 11,529**	$ 9,883	$ 9,419
Supplemental disclosures			
Interest paid	**$ 3,307**	$ 233	$ 1,236
Income taxes paid	**449**	473	1,341
Income taxes refunded	**11**	42	60

See accompanying Notes to Consolidated Financial Statements.

Consolidated Statement of Changes in Equity

(in millions, except per share amount)	The Bank of New York Mellon Corporation shareholders						Nonredeemable noncontrolling interests of consolidated investment management funds	Total permanent equity	Redeemable non-controlling interests/ temporary equity
	Preferred stock	Common stock	Additional paid-in capital	Retained earnings	Accumulated other comprehensive (loss), net of tax	Treasury stock			
Balance at Dec. 31, 2021	$ 4,838	$ 14	$ 28,128	$ 36,667	$ (2,213)	$ (24,400)	$ 196	$ 43,230 *(a)*	$ 161
Shares issued to shareholders of noncontrolling interests	—	—	—	—	—	—	—	—	**31**
Redemption of subsidiary shares from noncontrolling interests	—	—	—	—	—	—	—	—	**(31)**
Other net changes in noncontrolling interests	—	—	**44**	—	—	—	**(176)**	**(132)**	**(37)**
Net income (loss)	—	—	—	**2,573**	—	—	**(13)**	**2,560**	—
Other comprehensive (loss)	—	—	—	—	**(3,753)**	—	—	**(3,753)**	**(13)**
Dividends:									
Common stock at $1.42 per share *(b)*	—	—	—	**(1,165)**	—	—	—	**(1,165)**	—
Preferred stock	—	—	—	**(211)**	—	—	—	**(211)**	—
Repurchase of common stock	—	—	—	—	—	**(124)**	—	**(124)**	—
Common stock issued under employee benefit plans	—	—	**20**	—	—	—	—	**20**	—
Stock awards and options exercised	—	—	**316**	—	—	—	—	**316**	—
Other	—	—	—	—	—	—	—	—	**(2)**
Balance at Dec. 31, 2022	**$ 4,838**	**$ 14**	**$ 28,508**	**$ 37,864**	**$ (5,966)**	**$ (24,524)**	**$ 7**	**$ 40,741** *(a)*	**$ 109**

(a) Includes total The Bank of New York Mellon Corporation common shareholders' equity of $38,196 million at Dec. 31, 2021 and $35,896 million at Dec. 31, 2022.
(b) Includes dividend-equivalents on share-based awards.

(in millions, except per share amount)	The Bank of New York Mellon Corporation shareholders						Nonredeemable noncontrolling interests of consolidated investment management funds	Total permanent equity	Redeemable non-controlling interests/ temporary equity
	Preferred stock	Common stock	Additional paid-in capital	Retained earnings	Accumulated other comprehensive (loss), net of tax	Treasury stock			
Balance at Dec. 31, 2020	$ 4,541	$ 14	$ 27,823	$ 34,241	$ (985)	$ (19,833)	$ 143	$ 45,944 *(a)*	$ 176
Shares issued to shareholders of noncontrolling interests	—	—	—	—	—	—	—	—	48
Redemption of subsidiary shares from noncontrolling interests	—	—	—	—	—	—	—	—	(94)
Other net changes in noncontrolling interests	—	—	(36)	—	—	—	41	5	29
Net income	—	—	—	3,759	—	—	12	3,771	—
Other comprehensive (loss) income	—	—	—	—	(1,228)	—	—	(1,228)	2
Dividends:									
Common stock at $1.30 per share *(b)*	—	—	—	(1,126)	—	—	—	(1,126)	—
Preferred stock	—	—	—	(197)	—	—	—	(197)	—
Repurchase of common stock	—	—	—	—	—	(4,567)	—	(4,567)	—
Common stock issued under employee benefit plans	—	—	18	—	—	—	—	18	—
Preferred stock redemption	(1,000)	—	—	—	—	—	—	(1,000)	—
Preferred stock issued	1,287	—	—	—	—	—	—	1,287	—
Stock awards and options exercised	—	—	323	—	—	—	—	323	—
Amortization of preferred stock discount	10	—	—	(10)	—	—	—	—	—
Balance at Dec. 31, 2021	$ 4,838	$ 14	$ 28,128	$ 36,667	$ (2,213)	$ (24,400)	$ 196	$ 43,230 *(a)*	$ 161

(a) Includes total The Bank of New York Mellon Corporation common shareholders' equity of $41,260 million at Dec. 31, 2020 and $38,196 million at Dec. 31, 2021.
(b) Includes dividend-equivalents on share-based awards.

Consolidated Statement of Changes in Equity (continued)

(in millions, except per share amount)	The Bank of New York Mellon Corporation shareholders						Nonredeemable noncontrolling interests of consolidated investment management funds	Total permanent equity	Redeemable non-controlling interests/ temporary equity
	Preferred stock	Common stock	Additional paid-in capital	Retained earnings	Accumulated other comprehensive (loss), net of tax	Treasury stock			
Balance at Dec. 31, 2019	$ 3,542	$ 14	$ 27,515	$ 31,894	$ (2,638)	$ (18,844)	$ 102	$ 41,585 *(a)*	$ 143
Impact of adopting ASU 2016-13, *Financial Instruments – Credit Losses*	—	—	—	45	(5)	—	—	40	—
Adjusted balance at Jan. 1, 2020	3,542	14	27,515	31,939	(2,643)	(18,844)	102	41,625	143
Shares issued to shareholders of noncontrolling interests	—	—	—	—	—	—	—	—	80
Redemption of subsidiary shares from noncontrolling interests	—	—	—	—	—	—	—	—	(31)
Other net changes in noncontrolling interests	—	—	12	—	—	—	32	44	(18)
Net income	—	—	—	3,617	—	—	9	3,626	—
Other comprehensive income	—	—	—	—	1,654	—	—	1,654	2
Dividends:									
Common stock at $1.24 per share *(b)*	—	—	—	(1,117)	—	—	—	(1,117)	—
Preferred stock	—	—	—	(179)	—	—	—	(179)	—
Repurchase of common stock	—	—	—	—	—	(989)	—	(989)	—
Common stock issued under employee benefit plans	—	—	26	—	—	—	—	26	—
Preferred stock redemption	(583)	—	—	—	—	—	—	(583)	—
Preferred stock issued	1,567	—	—	—	—	—	—	1,567	—
Stock awards and options exercised	—	—	270	—	—	—	—	270	—
Amortization of preferred stock discount	15	—	—	(15)	—	—	—	—	—
Other	—	—	—	(4)	4	—	—	—	—
Balance at Dec. 31, 2020	$ 4,541	$ 14	$ 27,823	$ 34,241	$ (985)	$ (19,833)	$ 143	$ 45,944 *(a)*	$ 176

(a) Includes total The Bank of New York Mellon Corporation common shareholders' equity of $37,941 million at Dec. 31, 2019 and $41,260 million at Dec. 31, 2020.
(b) Includes dividend-equivalents on share-based awards.

See accompanying Notes to Consolidated Financial Statements.

Note 1–Summary of significant accounting and reporting policies

In this Annual Report, references to "our," "we," "us," "BNY Mellon," the "Company" and similar terms refer to The Bank of New York Mellon Corporation and its consolidated subsidiaries. The term "Parent" refers to The Bank of New York Mellon Corporation but not its subsidiaries.

Nature of operations

BNY Mellon is a global leader in providing a broad range of financial products and services in domestic and international markets. Through our three principal business segments, Securities Services, Market and Wealth Services and Investment and Wealth Management, we serve institutions, corporations and high-net-worth individuals. See Note 24 for the primary products and services of our lines of business and other information.

Basis of presentation

The accounting and financial reporting policies of BNY Mellon, a global financial services company, conform to U.S. generally accepted accounting principles ("GAAP") and prevailing industry practices.

In the opinion of management, all adjustments necessary for a fair presentation of financial position, results of operations and cash flows for the periods presented have been made. Certain immaterial reclassifications have been made to prior periods to place them on a basis comparable with current period presentation.

Use of estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates based upon assumptions about future economic and market conditions which affect reported amounts and related disclosures in our financial statements. Our most significant estimates pertain to our allowance for credit losses, goodwill and other intangibles and litigation and regulatory contingencies. Although our current estimates contemplate current conditions and how we expect them to change in the future, it is reasonably possible that actual conditions could be worse than anticipated in those estimates, which could materially affect our results of operations and financial condition.

Foreign currency translation

Assets and liabilities denominated in foreign currencies are translated to U.S. dollars at the rate of exchange on the balance sheet date. Translation gains and losses on investments in foreign entities with functional currencies that are not the U.S. dollar are recorded as foreign currency translation adjustments in other comprehensive income ("OCI"). Revenue and expense transactions are translated at the applicable daily rate or the weighted average monthly exchange rate when applying the daily rate is not practical. For transactions that are denominated in a currency other than the functional currency, the effects of exchange rate changes are included in foreign exchange revenue in the income statement.

Acquired businesses

The income statement and balance sheet include results of acquired businesses accounted for under the acquisition method of accounting pursuant to Accounting Standards Codification ("ASC") 805, *Business Combinations*, and equity investments from the dates of acquisition. Contingent purchase consideration is measured at its fair value and recorded on the purchase date. Any subsequent changes in the fair value of a contingent consideration liability are recorded through the income statement.

Consolidation

We evaluate an entity for possible consolidation in accordance with ASC 810, *Consolidation*. We first determine whether or not we have variable interests in the entity, which are investments or other interests that absorb portions of an entity's expected losses or receive portions of the entity's expected returns. Our variable interests may include decision-maker or service provider fees, direct and indirect investments and investments made by related parties, including related parties under common control. If it is determined that we do not have a variable interest in the entity, no further analysis is required and the entity is not consolidated.

If we hold a variable interest in the entity, further analysis is performed to determine if the entity is a variable interest entity ("VIE") or a voting model entity ("VME").

We consider the underlying facts and circumstances of individual entities when assessing whether or not an entity is a VIE. An entity is determined to be a VIE if the equity investors:

- do not have sufficient equity at risk for the entity to finance its activities without additional subordinated financial support; or
- lack one or more of the following characteristics of a controlling financial interest:
  - the power, through voting rights or similar rights, to direct the activities of an entity that most significantly impact the entity's economic performance;
  - the obligation to absorb the expected losses of the entity; and
  - the right to receive the expected residual returns of the entity.

We reconsider and reassess whether or not we are the primary beneficiary of a VIE when governing documents or contractual arrangements are changed that would reallocate the obligation to absorb expected losses or receive expected residual returns between BNY Mellon and the other investors. This could occur when BNY Mellon disposes of any portion of its variable interests in the VIE, when we acquire additional variable interests in the VIE, when additional variable interests are issued to other investors or when other investors liquidate their variable interest in the VIE.

We consolidate a VIE if it is determined that we have a controlling financial interest in the entity. We have a controlling financial interest in a VIE when we have both (1) the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and (2) the obligation to absorb losses or the right to receive benefits of the VIE that could potentially be significant to that VIE.

For entities that do not meet the definition of a VIE, the entity is considered a VME. We consolidate these entities if we can exert control over the financial and operating policies of an investee, which can occur if we have a 50% or more voting interest in the entity.

See Note 14 for additional disclosures related to our variable interests.

Equity method investments, including renewable energy investments

Equity investments of less than a majority but at least 20% ownership or where we are deemed to have significant influence are accounted for by the equity method and included in other assets. Earnings on these investments are reflected as investment services fees, investment management and performance fees or investment and other revenue, as appropriate, in the period earned.

A loss in value of an equity investment that is determined to be other-than-temporary is recognized by reducing the carrying value of the equity investment to its fair value.

Renewable energy investment projects through limited liability companies are accounted for using the equity method of accounting. The hypothetical liquidation at book value ("HLBV") methodology is used to determine the pre-tax loss that is recognized in each period. HLBV estimates the liquidation value at the beginning and end of each period, with the difference recognized as the amount of loss under the equity method.

The pre-tax losses are reported in investment and other revenue on the income statement. The corresponding tax benefits and credits are recorded as a reduction to provision for income taxes on the income statement.

See Note 8 for the amount of our renewable energy investments. Below are our most significant equity method investments, other than the investments in renewable energy.

Equity method investments at Dec. 31, 2022

(dollars in millions)	Percentage ownership		Book value
CIBC Mellon Global Securities Services Company ("CIBC Mellon")	**50 %**	**$**	**545**
Siguler Guff	**20 %**	**$**	**242**
Innocap Investment Management Inc.	**18.75 %**	**$**	**16**

Restricted cash and securities

Cash and securities may be segregated under federal and other regulatory requirements and primarily consists of excess client funds held by our broker-dealer entities. Restricted cash is included in interest-bearing deposits with banks on the balance sheet and

with cash and due from banks when reconciling the beginning and end-of-period balances on the consolidated statement of cash flows.

Securities purchased under resale agreements and securities sold under repurchase agreements

Securities purchased under resale agreements and securities sold under repurchase agreements are accounted for as collateralized financings. Generally, these agreements are recorded at the amounts at which the securities will be subsequently resold or repurchased, plus accrued interest.

Securities purchased under resale agreements are fully collateralized with high-quality liquid securities. Collateral requirements are monitored and additional collateral is received or provided, as required. As such, these transactions carry minimal credit risk and are generally not allocated an allowance for credit losses.

Where an enforceable netting agreement exists, resale and repurchase agreements executed with the same counterparty and the same maturity date are reported on a net basis on the balance sheet.

Securities – Debt

Debt securities are classified as available-for-sale, held-to-maturity or trading securities when they are purchased. Debt securities are classified as available-for-sale securities when we intend to hold the securities for an indefinite period of time or when the securities may be used for tactical asset/liability purposes and may be sold from time to time to effectively manage interest rate exposure, prepayment risk and liquidity needs. Debt securities are classified as held-to-maturity securities when we intend and have the ability to hold them until maturity. Debt securities are classified as trading securities when our intention is to resell the securities.

Available-for-sale securities are measured at fair value. The difference between fair value and amortized cost representing unrealized gains or losses on assets classified as available-for-sale is recorded net of tax as an addition to, or deduction from, OCI, unless an expected credit loss is recognized. Realized gains and losses on sales of available-for-sale securities are reported in investment and other revenue on the income statement. The cost of debt securities sold is determined on a specific identification method. Held-to-maturity securities are measured at amortized cost, net of expected credit loss, if any.

The Company's policy for recognition of expected credit losses for securities available-for-sale and securities held-to-maturity is contained within "Allowance for credit losses – Securities – Debt" and "Allowance for credit losses – Other" below.

Trading securities are measured at fair value and included in trading assets on the balance sheet. Trading revenue includes both realized and unrealized gains and losses. The liability incurred on short-sale transactions, representing the obligation to deliver securities, is included in trading liabilities at fair value.

Income on securities purchased is adjusted for amortization of premium and accretion of discount on a level yield basis, generally over their contractual life.

For debt securities that are beneficial interests in securitized financial assets and are not high credit quality, ASC 325, *Investments – Other*, provides that cash flows be discounted at the current yield used to accrete the beneficial interest. A credit loss is recognized when there is an adverse change in expected cash flows.

If we intend to sell a debt security or it is more likely than not that we will be required to sell a debt security prior to recovery of its cost basis, the security is written down to fair value and the credit and non-credit components of the unrealized loss are recognized in earnings and subsequently accreted to interest income on an effective yield basis over the life of the security. Subsequent increases in the fair value of the security after the write-down are included in OCI.

Securities – Equity

Investments in equity securities that do not result in consolidation and are not accounted for under the equity method are measured at fair value with changes in the fair value recognized through earnings, unless one of two available exceptions applies. The first exception, a scope exception, allows Federal Reserve Bank stock, Federal Home Loan Bank stock and exchange memberships to remain accounted for at cost, less impairment. The second practicability

exception is an election available for equity investments that do not have readily determinable fair values. For certain investments where the Company has chosen the practicability exception, such investments are accounted for in other assets on the balance sheet at cost adjusted for impairment, if any, plus or minus observable price changes in orderly transactions for an identical or similar investment of the same issuer with any such changes reflected in investment and other revenue. Equity securities with readily determinable fair values are classified in trading assets with changes in fair value reflected in other trading revenue, which is included in investment and other revenue in the consolidated income statement.

Loans

Loans are reported at amortized cost, net of any unearned income and deferred fees and costs. Certain loan origination and upfront commitment fees, as well as certain direct loan origination and commitment costs, are deferred and amortized as a yield adjustment over the lives of the related loans. Loans held for sale are carried at the lower of cost or fair value.

Troubled debt restructurings/loan modifications

A modified loan is considered a troubled debt restructuring ("TDR") if the debtor is experiencing financial difficulties and the creditor grants a concession to the debtor that would not otherwise be considered. A TDR may include a transfer of real estate or other assets from the debtor to the creditor, or a modification of the term of the loan. Credit losses related to TDRs are accounted for under an individual evaluation methodology (see "Allowance for credit losses" below). Credit losses for anticipated TDRs are generally accounted for similarly to TDRs and are identified when there is a reasonable expectation that a TDR will be executed with the borrower and when we expect the modification to affect the timing or amount of payments and/or the payment term.

Due to the coronavirus pandemic, there have been two forms of relief provided for classifying loans as TDRs: The Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") and the Interagency Guidance (as defined below). Financial institutions may account for eligible loan modifications either under the CARES Act or the Interagency Guidance.

The Company has elected to apply both the CARES Act and the Interagency Guidance, as applicable, in providing borrowers with loan modification relief in response to the coronavirus pandemic.

The CARES Act, which became law on March 27, 2020, provides that financial institutions may, subject to certain conditions, elect to temporarily suspend the U.S. GAAP requirements with respect to loan modifications related to the coronavirus pandemic that were current as of Dec. 31, 2019 and that would otherwise be identified and treated as TDRs. On Dec. 27, 2020, the Consolidated Appropriations Act, 2021 was signed into law and extended the period established by the CARES Act under which consideration of TDR identification and accounting triggered by effects of the coronavirus pandemic are suspended. That extension period ended on Jan. 1, 2022.

Various banking regulators issued guidance in the April 7, 2020 "Interagency Statement on Loan Modifications and Reporting for Financial Institutions Working with Customers Affected by the Coronavirus (revised)" ("Interagency Guidance") on loan modification treatment pursuant to which financial institutions can apply the U.S. GAAP requirements for loan modifications. In accordance with this guidance, a loan modification is not considered a TDR if the modification is related to the coronavirus pandemic, the borrower had been current when the modification program was implemented, and the modification includes payment deferrals for not more than six months.

Nonperforming assets

Commercial loans are placed on nonaccrual status when principal or interest is past due 90 days or more, or when there is reasonable doubt that interest or principal will be collected.

When a first or second lien residential mortgage loan reaches 90 days delinquent, it is subject to an individual evaluation of credit loss and placed on nonaccrual status.

When a loan is placed on nonaccrual status, previously accrued and uncollected interest is reversed against current period interest revenue. Interest receipts on nonaccrual loans are recognized as interest revenue or are applied to principal when we believe the ultimate collectability of principal is in

doubt. Nonaccrual loans generally are restored to an accrual basis when principal and interest become current and remain current for a specified period.

"Allowance for credit losses" below provides additional information regarding the individual evaluation of credit losses for nonperforming loans.

Allowance for credit losses

The accounting policy for determining the allowances has been identified as a "critical accounting estimate" as it requires us to make numerous complex and subjective estimates and assumptions relating to amounts which are judgmental and inherently uncertain.

Credit quality is monitored by management and is reflected within the allowance for credit losses. The allowance represents management's estimate of expected credit losses over the expected contractual life of the financial instruments as of the balance sheet date. The allowance methodology is designed to provide procedural discipline in assessing the appropriateness of the allowance.

A quantitative methodology and qualitative framework is used to estimate the allowance for credit losses. The qualitative framework is described in further detail within "Allowance for credit losses – Other" below. The quantitative component of our estimate uses models and methodologies that categorize financial assets based on product type, collateral type, and other credit trends and risk characteristics, including relevant information about past events, current conditions and reasonable and supportable forecasts of future economic conditions that affect the collectability of the recorded amounts. The allowance may be determined using various methods, including discounted cash flow methods, loss-rate methods, probability of default methods or other methods that we determine to be appropriate. We estimate our expected credit losses using the probability of default method for the majority of our financial assets. We measure expected credit losses of financial assets on a collective (pool) basis when similar risk characteristics exist. For a financial asset that does not share risk characteristics with other assets, expected credit losses are measured based on an individual evaluation method.

In our estimate, with the exception of our small home equity line of credit portfolio, available-for-sale debt securities, and individually evaluated financial assets, we utilize a multi-scenario macroeconomic forecast which includes a weighting of three scenarios: a baseline and upside and downside scenarios and allows us to develop our estimate using a wide span of economic variables. Our baseline scenario reflects a view on likely performance of each global region and the other two scenarios are designed relative to the baseline scenario. This approach incorporates a reasonable and supportable forecast period spanning the life of the asset, and this period includes both an initial estimated economic outlook component as well as a reversion component for each economic input variable. The length of each of the two components depends on the underlying financial instrument, scenario and underlying economic input variable. In general, the initial economic outlook period for each economic input variable under each scenario ranges between several months and two years. The speed at which the scenario-specific forecasts revert to long-term historical mean is based on observed historical patterns of mean reversion at the economic variable input level that are reflected in our model parameter estimates. Certain macroeconomic variables such as unemployment or home prices take longer to revert after a contraction, though specific recovery times are scenario-specific. Reversion will usually take longer the further away the scenario-specific forecast is from the historical mean. On a quarterly basis, within a developed governance structure, we update these scenarios for current economic conditions and may adjust the scenario weighting based on our economic outlook.

Allowance for credit losses – Loans and lending-related commitments

The allowance for credit losses on loans is presented as a valuation allowance to loans, and the allowance for credit losses on lending-related commitments is recorded in other liabilities. The components of the allowance for credit losses on loans and lending-related commitments consist of the following three elements:

- a pooled allowance component for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate;
- a pooled allowance component for residential mortgage loans; and

- an asset-specific allowance component involving individually evaluated credits of $1 million or greater.

The first element, a pooled allowance component for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate, is based on our expected credit loss model using the probability of default method, which has been adjusted for the forecast of economic conditions. Individual credit analyses are performed on such loans before being assigned a credit rating. Segmentation is established based on risk characteristics of the loans and how risk is monitored. In estimating the terms of the exposures and resulting effect on the measurement of expected credit loss, we consider the impact of potential prepayments as well as the effect of borrower extension options. Borrower ratings are reviewed at least annually and are mapped to third-party databases, including rating agency and default and recovery databases, to support ongoing consistency and validity. Higher risk-rated loans and lending-related commitments are reviewed quarterly.

For the higher-risk rated and pass-rated commercial and institutional credits, the loss expected in each loan incorporates the borrower's credit rating, facility rating and maturity. The loss given default, derived from the facility rating, incorporates a recovery expectation, and for unfunded lending exposures, an estimate of the use of the facility at default (usage given default). The borrower's probability of default is derived from the associated credit rating. The probability of default and the loss given default are applied to the estimated facility amount at default to determine the quantitative component of the allowance. For each of the different parameters, specific credit models are developed for each segment of our portfolio, including commercial loans and lease financing, financial institutions and other. We use both internal and external data in the development of these parameters.

For loans secured by commercial real estate, a separate modeled approach is used that considers collateral specific data and loan maturity, as well as commercial real estate market factors by geographical region and property type under different macroeconomic scenarios. A statistical method is used to simulate the property value and income of each property, and to estimate the probability of default, loss given default and expected credit loss for each loan. The model outputs are established by using a baseline, upside and downside macroeconomic scenario to generate projected property values and incomes.

The second element, a pooled allowance component for residential mortgage loans, is determined by first segregating our mortgage pools into two categories: (i) our wealth management mortgages and (ii) our legacy mortgage portfolio disclosed as other residential mortgages. We then apply models to each portfolio to predict prepayments, default rates and loss severity. We consider historical loss experience and use a loan-level, multi-period default model which further segments each portfolio by product type, including first lien fixed rate mortgages, first lien adjustable rate mortgages, second lien mortgages and interest-only mortgages. We calculate the mortgage loss up to loan contractual maturity and embed a reasonable and supportable forecast and macroeconomic variable inputs which are described above. For home equity lines of credit, probability of default and loss given default are based on external data from third-party databases due to the small size of the portfolio and limited internal data. Our legacy mortgage portfolio and home equity line of credit portfolios represent small sub-segments of our mortgage loans.

The third element, individually evaluated credits, is based on individual analysis of loans of $1 million and greater which no longer share the risk characteristics with other loans. Factors we consider in measuring the extent of expected credit loss include the payment status, collateral value, the borrower's financial condition, guarantor support, the probability of collecting scheduled principal and interest payments when due, anticipated modifications of payment structure or term for troubled borrowers, and recoveries if they can be reasonably estimated. We measure the expected credit loss as the difference between the amortized cost basis of the loan and the present value of the expected future cash flows from the borrower which is generally discounted at the loan's effective interest rate, or the fair value of the collateral, if the loan is collateral dependent. We generally consider nonperforming loans as well as loans that have been or are anticipated to be modified and classified under a troubled debt restructuring for individual evaluation given the risk characteristics of such loans.

Allowance for credit losses – Securities – Debt

When estimating expected credit losses, we segment our available-for-sale and held-to-maturity debt securities portfolios by major asset class. This is influenced by whether the security is structured or non-structured (i.e., direct obligation), as well as the issuer type.

For available-for-sale debt securities with an unrealized loss at the balance sheet date, if we determine that a credit loss exists, the amount is recognized as an allowance for credit losses in securities – available-for-sale, with a corresponding adjustment to the provision for credit losses. We evaluate credit losses at the individual security level and do not recognize credit losses if the fair value exceeds amortized cost, and if we determine that a credit loss exists, we limit the recognition of the loss to the difference between fair value and amortized cost. In our determination of whether an expected credit loss exists, we routinely conduct periodic reviews and examine various quantitative and qualitative factors that are unique to each portfolio, including the severity of the unrealized loss position, agency rating, credit enhancement, cash flow deterioration and other factors. The measurement of an expected credit loss is then based on the best estimate of the present value of cash flows to be collected from the debt security. Generally, cash flows are discounted at the effective interest rate implicit in the debt security. Changes to the present value of cash flows due to the passage of time are recognized within the allowance for credit losses.

We estimate expected credit losses for held-to-maturity debt securities using a similar methodology as described in the first allowance element within "Allowance for credit losses – Loans and lending-related commitments" above. The allowance for credit losses on held-to-maturity debt securities is recorded in securities – held-to-maturity. The components of the credit loss calculation for each major portfolio or asset class include a probability of default and loss given default and their values depend on the forecast behavior of variables in the macroeconomic environment. For structured debt securities, we estimated expected credit losses at the individual security level and use a cash flow model to project principal losses. Generally, cash flows are discounted at the effective interest rate implicit in the debt security. The difference is reflected in the allowance for credit losses, and changes to the present value of cash flows due to the passage of time are recognized within the allowance for credit losses.

We currently do not require an estimate of expected credit losses to be measured and recorded for U.S. Treasury securities, agency debt securities, and other debt securities that meet certain conditions that are based on a combination of factors such as guarantees, credit ratings and other credit quality factors. These assets are monitored within our established governance structure on a recurring basis to determine if any changes are warranted.

Allowance for credit losses – Other financial instruments

We also estimate expected credit losses associated with margin loans, reverse repurchase agreements, security lending indemnifications, and deposits with third-party financial institutions using a similar risk rating-based modeling approach as described in the first allowance element within "Allowance for credit losses – Loans and lending-related commitments" above. The allowance for credit losses on reverse repurchase agreements is recorded in federal funds sold and securities purchased under resale agreements; the allowance for credit losses on securities lending indemnifications is recorded in other liabilities and the allowance for credit losses on deposits with third-party financial institutions is recorded in cash and due from banks or interest-bearing deposits with banks. Our reverse repurchase agreements are short-term and subject to continuous over-collateralization by our counterparties and timely collateral replenishment, when necessary. As a result, we estimate the expected credit loss related to the uncollateralized portion of the asset at the balance sheet date, if any, and when there is a reasonable expectation that the counterparty will not replenish the collateral in compliance with the terms of the repurchase agreement. This method is also applied to margin lending arrangements and securities lending indemnifications.

Allowance for credit losses – Other

We do not apply our credit loss measurement methodologies to accrued interest receivable balances related to our loan, debt securities and deposits with third-party financial institution assets given our nonaccrual policy that requires charge-off of interest receivable when deemed uncollectible. Accrued interest receivable related to these instruments, along

with other interest-bearing instruments, is included on the consolidated balance sheet. Accrued interest receivable related to each major loan class is disclosed within our credit quality disclosure in Note 5.

Our policy for credit losses related to purchased financial assets requires an evaluation to be performed prior to the effective purchase date to determine if more than an insignificant decline in credit quality has occurred during the period between the origination and purchase date, or, in the case of debt securities, the period between the issuance and purchase date. If we purchase a financial asset with more than insignificant deterioration in credit quality, the measurement of expected credit loss is performed using the methodologies described above, and the credit loss is recorded as an allowance for credit losses on the purchase date. Subsequent to purchase, changes (favorable and unfavorable) in expected cash flows are recognized immediately in net income by adjusting the allowance. We evaluate various factors in the determination of whether a more than an insignificant decline in credit quality has occurred and these factors vary depending upon the type of asset purchased. Such factors include changes in risk rating and/or agency rating, collateral deterioration, payment status, purchase price, credit spreads and other factors. We did not purchase any such assets in 2022 or 2021 and did not own such assets as of Dec. 31, 2022 or Dec. 31, 2021.

We apply a separate credit loss methodology to accounts receivables to estimate the expected credit losses associated with these short-term receivables which historically have not resulted in significant credit losses. The allowance for credit losses on accounts receivables is reflected in other assets.

The qualitative component of our estimate for the allowance for credit losses is intended to capture expected losses that may not have been fully captured in the quantitative component. Through an established governance structure, management determines the qualitative allowance each period based on an evaluation of various internal and environmental factors which include: scenario weighting and sensitivity risk, credit concentration risk, economic conditions and other considerations. We may also make adjustments for idiosyncratic risks. Once determined in the aggregate, our qualitative allowance is then allocated to each of our financial instrument portfolios except for debt securities and those instruments carried in other assets based on the respective instruments' quantitative allowance balances. The allocation of this additional allowance for credit losses is inherently judgmental, and the entire allowance for credit losses is available to absorb credit losses regardless of the nature of the loss.

Premises and equipment

Premises and equipment are carried at cost less accumulated depreciation and amortization. Depreciation and amortization is computed using the straight-line method over the estimated useful life of the owned asset and, for leasehold improvements, over the lesser of the remaining term of the leased facility or the estimated economic life of the improvement. For owned and capitalized assets, estimated useful lives range from two to 40 years. Maintenance and repairs are charged to expense as incurred, while major improvements are capitalized and amortized to operating expense over their identified useful lives.

Leasing

We determine if an arrangement is a lease at inception. Right-of-use ("ROU") assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments. The ROU assets and lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date or at lease modification date for certain lease modifications. For all leases, we use a discount rate that represents a collateralized borrowing rate based on similar terms and information available at lease commencement date or at the modification date for certain lease modifications in determining the present value of lease payments. In addition to the lease payments, the determination of an ROU asset may also include certain adjustments related to lease incentives and initial direct costs incurred. Options to extend or terminate a lease are included in the determination of the ROU asset and lease liability only when it is reasonably certain that we will exercise that option.

Lease expense for operating leases is recognized on a straight-line basis over the lease term, while the lease expense for finance leases is recognized using the effective interest method. ROU assets are reviewed for impairment when events or circumstances indicate

that the carrying amount may not be recoverable. For operating leases, if deemed impaired, the ROU asset is written down and the remaining balance is subsequently amortized on a straight-line basis which results in lease expense recognition that is similar to finance leases.

For all leases, we have elected to account for the contractual lease and non-lease components as a single lease component and include them in the calculation of the lease liability. The non-lease variable components, such as maintenance expense and other variable costs, including non-index or rate escalations, have been excluded from the calculation and disclosed separately. Additionally, for certain equipment leases, we apply a portfolio approach to account for the operating lease ROU assets and liabilities.

For subleasing activities, the rental income is reported as part of net occupancy expense, as this activity is not a significant business activity and is part of the Company's customary business practice.

For direct finance leases, unearned revenue is accreted over the lives of the leases in decreasing amounts to provide a constant rate of return on the net investment in the leases. We have leveraged lease transactions that were entered into prior to Dec. 31, 2018. These leases are grandfathered under ASC 842, *Leases*, which became effective Jan. 1, 2019, and will continue to be accounted for under the prior guidance unless the leases are subsequently modified. Revenue on leveraged leases is recognized on a basis to achieve a constant yield on the outstanding investment in the lease, net of the related deferred tax liability, in the years in which the net investment is positive. Gains and losses on residual values of leased equipment sold are included in investment and other revenue. Impairment of leveraged lease residual values that is deemed other-than-temporary is reflected in net interest revenue. Considering the nature of these leases and the number of significant assumptions, there is risk associated with the income recognition on these leases should any of the assumptions change materially in future periods.

Software

We capitalize costs relating to acquired software and internal-use software development projects that provide new or significantly improved functionality. We capitalize projects that are expected to result in longer-term operational benefits, such as replacement systems or new applications that result in significantly increased operational efficiencies or functionality. All other costs incurred in connection with an internal-use software project are expensed as incurred. Capitalized software is recorded in other assets on the balance sheet. We record amortization of capitalized software in software and equipment expense on the income statement.

Identified intangible assets and goodwill

Identified intangible assets with estimable lives are amortized in a pattern consistent with the assets' identifiable cash flows or using a straight-line method over their remaining estimated benefit periods if the pattern of cash flows is not estimable. Intangible assets with estimable lives are reviewed for possible impairment when events or changed circumstances may affect the underlying basis of the asset. Goodwill and intangibles with indefinite lives are not amortized, but are assessed annually for impairment, or more often if events and circumstances indicate it is more likely than not they may be impaired and to determine if the lives are no longer indefinite and should be amortized. The amount of goodwill impairment, if any, is determined by the excess of the carrying value of the reporting unit over its fair value. The accounting policy for valuing and impairment testing of identified intangible assets and goodwill has been identified as a "critical accounting estimate" as it requires us to make numerous complex and subjective estimates. See Note 7 for additional disclosures related to goodwill and intangible assets.

Investments in qualified affordable housing projects

Investments in qualified affordable housing projects through a limited liability entity are accounted for utilizing the proportional amortization method. Under the proportional amortization method, the initial cost of the investment is amortized to the provision for income taxes in proportion to the tax credits and other tax benefits received. The net investment performance, including tax credits and other benefits received, is recognized in the income statement as a component of the provision for income taxes. Additionally, the value of the commitments to fund qualified affordable housing projects is included in other assets on the balance sheet and a liability is recorded for the unfunded portion.

Seed capital

Seed capital investments are generally classified as other assets and carried at fair value unless we are required to consolidate the investee due to having a controlling financial interest. Unrealized gains and losses on seed capital investments are recorded in investment and other revenue. Certain risk retention investments in our collateralized loan obligations ("CLOs") are classified as available-for-sale securities. As of Dec. 31, 2022, we no longer held any such risk retention CLOs.

Noncontrolling interests

Noncontrolling interests represent the portion of consolidated entities that are owned by parties other than BNY Mellon. Noncontrolling interests included in permanent equity are adjusted for the income or loss attributable to the noncontrolling interest holders and any distributions to those shareholders. Redeemable noncontrolling interests are reported as temporary equity and represent the redemption value resulting from equity-classified share-based payment arrangements that are currently redeemable or are expected to become redeemable. We recognize changes in the redemption value of the redeemable noncontrolling interests as they occur and adjust the carrying value to be equal to the redemption value.

Fee revenue

Investment services fee revenue and investment management and performance fee revenue are based on terms specified in a contract with a customer and are shown net of fee waivers and exclude any amounts collected on behalf of third parties. Revenue is recognized when, or as, a performance obligation is satisfied by transferring control of a good or service to a customer. A performance obligation may be satisfied over time or at a point in time. Revenue from a performance obligation satisfied over time is recognized by measuring our progress in satisfying the performance obligation in a manner that reflects the transfer of goods and services to the customer. Revenue from a performance obligation satisfied at a point in time is recognized at the point in time the customer obtains control of the promised good or service. The amount of revenue recognized reflects the consideration we expect to be entitled to in exchange for the promised goods and services. Taxes assessed by a governmental authority, that are both imposed on, and concurrent with, a specific revenue-producing transaction, are collected from a customer and are excluded from revenue.

Performance fees are recognized in the period in which the performance fees are earned and become determinable. Performance fees are constrained until all uncertainties are resolved and reversal of previously recorded amounts is not probable. Performance fees are generally calculated as a percentage of the applicable portfolio's performance in excess of a benchmark index or a peer group's performance. When a portfolio underperforms its benchmark or fails to generate positive performance, subsequent years' performance must generally exceed this shortfall prior to fees being earned. Amounts billable, which are subject to a clawback if future performance thresholds in current or future years are not met, are not recognized since the fees are potentially uncollectible. These fees are recognized when it is determined that they will be collected. When a multi-year performance contract provides that fees earned are billed ratably over the performance period, only the portion of the fees earned that are non-refundable are recognized.

Additionally, we recognize revenue from non-refundable, implementation fees under outsourcing contracts using a straight-line method, commencing in the period the ongoing services are performed through the expected term of the contractual relationship. Incremental direct set-up costs of implementation, up to the related customer margin or minimum fee revenue amount, are deferred and amortized over the same period that the related implementation fees are recognized. If a client terminates an outsourcing contract prematurely, the unamortized deferred incremental direct set-up costs and the unamortized deferred implementation fees related to that contract are recognized in the period the contract is terminated.

We record foreign exchange revenue, financing-related fees and other revenue when the services are provided and earned based on contractual terms, when amounts are determined and collectability is reasonably assured.

Net interest revenue

Revenue on interest-earning assets and expense on interest-bearing liabilities are recognized based on the effective yield of the related financial instrument. The amortization of premiums and accretion of

discounts are included in interest revenue and are adjusted for prepayments when they occur, such that the effective yield remains constant throughout the contractual life of the security. Negative interest incurred on assets or charged on liabilities is presented as contra interest revenue and contra interest expense, respectively.

Pension

The measurement date for BNY Mellon's pension plans is December 31. Plan assets are determined based on fair value generally representing observable market prices. The projected benefit obligation is determined based on the present value of projected benefit distributions at an assumed discount rate. The discount rate utilized is based on the yield curves of high-quality corporate bonds available in the marketplace. The net periodic pension expense or credit includes service costs (if applicable), interest costs based on an assumed discount rate, an expected return on plan assets based on an actuarially derived market-related value, amortization of prior service cost and amortization of prior years' actuarial gains and losses.

Actuarial gains and losses include gains or losses related to changes in the amount of the projected benefit obligation or plan assets resulting from demographic or investment experience different than assumed, changes in the discount rate or other assumptions. To the extent an actuarial gain or loss exceeds 10% of the greater of the projected benefit obligation or the market-related value of plan assets, the excess is generally recognized over the future service periods of active employees. Benefit accruals under the U.S. pension plans and the largest foreign pension plan in the UK are frozen. Future unrecognized actuarial gains and losses for these frozen plans that exceed a threshold amount are amortized over the average future life expectancy of plan participants with a maximum of 15 years.

Our expected long-term rate of return on plan assets is based on anticipated returns for each applicable asset class. Anticipated returns are weighted for the expected allocation for each asset class and are based on forecasts for prospective returns in the equity and fixed-income markets, which should track the long-term historical returns for these markets. We also consider the growth outlook for U.S. and global economies, as well as current and prospective interest rates.

The market-related value utilized to determine the expected return on plan assets is based on the fair value of plan assets adjusted for the difference between expected returns and actual performance of plan assets. The difference between actual experience and expected returns on plan assets is included as an adjustment in the market-related value over a five-year period.

See Note 18 for additional disclosures related to pensions.

Stock-based compensation

Compensation expense relating to share-based payments is recognized in staff expense on the income statement, on a straight-line basis, over the applicable vesting period.

Certain stock compensation grants vest when the employee retires. New grants with this feature are expensed by the first date the employee is eligible to retire. We estimate forfeitures when recording compensation cost related to share-based payment awards.

Severance

BNY Mellon provides separation benefits for U.S.-based employees through The Bank of New York Mellon Corporation Supplemental Unemployment Benefit Plan. These benefits are provided to eligible employees separated from their jobs for business reasons not related to individual performance. Basic separation benefits are generally based on the employee's years of continuous benefited service. Severance for employees based outside of the U.S. is determined in accordance with local agreements and legal requirements. Severance expense is recorded when management commits to an action that will result in separation and the amount of the liability can be reasonably estimated.

Income taxes

We record current tax liabilities or assets through charges or credits to the current tax provision for the estimated taxes payable or refundable for the current year. Deferred tax assets and liabilities are recorded for future tax consequences attributable to differences between the financial statement carrying amounts of assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using

enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. A deferred tax valuation allowance is established if it is more likely than not that all or a portion of the deferred tax assets will not be realized. A tax position that fails to meet a more-likely-than-not recognition threshold will result in either reduction of current or deferred tax assets, and/or recording of current or deferred tax liabilities. Interest and penalties related to income taxes are recorded as income tax expense.

Derivative financial instruments

Derivatives are recorded on the balance sheet at fair value and include futures, forwards, interest rate swaps, foreign currency swaps and options and similar products. Derivatives in an unrealized gain position are recognized as assets while derivatives in unrealized loss position are recognized as liabilities. Derivatives are reported net by counterparty and after consideration of cash collateral, to the extent subject to legally enforceable netting agreements. Derivatives designated and effective in qualifying hedging relationships are classified in other assets or other liabilities on the balance sheet. All other derivatives are classified within trading assets or trading liabilities on the balance sheet. Gains and losses on trading derivatives are generally included in foreign exchange revenue or investment and other revenue, as applicable.

We enter into various derivative financial instruments for non-trading purposes primarily as part of our asset/liability management process. These non-trading derivatives are designated as one of three types of hedge activities: fair value, cash flow or net investment hedges.

To qualify for hedge accounting, each hedge relationship is required to be highly effective at reducing the risk associated with the exposure being hedged, both prospectively and retrospectively. We formally document all relationships, including hedging instruments and hedged items, as well as our risk management objectives and strategy for undertaking each hedging transaction. At inception, the potential cause of ineffectiveness related to each of our hedges is assessed to determine if we can expect the hedge to be highly effective over the life of the transaction. At hedge inception, we document the methodology to be utilized for evaluating effectiveness on an ongoing basis, and we monitor ongoing hedge effectiveness at least quarterly.

For qualifying fair value hedges, changes in the fair value of the derivative, and changes in the value of the hedged item associated with the designated risks being hedged, are recognized in earnings. Certain amounts excluded from the assessment of effectiveness are recorded in OCI and recognized in earnings through an amortization approach over the life of the derivative. We discontinue hedge accounting prospectively when we determine that the hedge is no longer effective or the derivative expires, is sold, or management discontinues the derivative's hedge designation. Subsequent gains and losses on these derivatives are included in foreign exchange revenue or other trading revenue, as applicable. For discontinued fair value hedges, the accumulated gain or loss on the hedged item is amortized on a yield basis over the remaining life of the hedged item.

For qualifying cash flow hedges, changes in the fair value of the derivative are recorded in OCI, until reclassified into earnings in the same period the hedged item impacts earnings. If the hedge relationship is terminated, then the change in value will be reclassified from OCI to earnings when the cash flows that were previously hedged affect earnings. If cash flow hedge accounting is discontinued as a result of a forecasted transaction no longer being probable to occur, then the amount reported in OCI is immediately reclassified to current earnings.

Derivative amounts affecting earnings are recognized in the same income statement line as the hedged item affects earnings, principally interest revenue, interest expense, foreign exchange revenue and staff expense.

Foreign currency transaction gains and losses related to qualifying hedges of net investments in a foreign operation are recorded with cumulative foreign currency translation adjustments within OCI net of their tax effect. The Company evaluates effectiveness of its foreign currency derivatives designated as hedges of its net investments utilizing the forward rate method.

See Note 23 for additional disclosures related to derivative financial instruments.

Earnings per common share

Earnings per common share is calculated using the two-class method under which earnings are allocated to common shareholders and holders of participating securities. Unvested stock-based compensation awards that contain non-forfeitable rights to dividends or dividend equivalents are considered participating securities under the two-class method.

Basic earnings per share is calculated by dividing net income allocated to common shareholders of BNY Mellon by the average number of common shares outstanding and vested stock-based compensation awards where recipients have satisfied either the explicit vesting terms or retirement-eligibility requirements.

Diluted earnings per common share is computed under the more dilutive of either the treasury stock method or the two-class method. We increase the average number of shares of common stock outstanding by the assumed number of shares of common stock that would be issued assuming the exercise of stock options and the issuance of shares related to stock-based compensation awards using the treasury stock method, if dilutive. Diluted earnings per share is calculated by dividing net income allocated to common shareholders of BNY Mellon by the adjusted average number of common shares outstanding.

Statement of cash flows

We have defined cash as cash and due from banks. Distributions received from equity method investees are classified as cash inflows from operating activities on the statement of cash flows. Excess returns on investments of equity method investments are classified as cash flows from investing activities on the statement of cash flows.

Note 2–Accounting changes and new accounting guidance

The following accounting guidance was adopted in 2022.

Staff Accounting Bulletin No. 121

In March 2022, the SEC staff released Staff Accounting Bulletin No. 121 ("SAB 121"). SAB 121 expresses the staff's views regarding the accounting for entities that have obligations to safeguard "crypto-assets" held for their platform users. SAB 121 provides that these entities should present a liability and corresponding asset in respect of the crypto-assets safeguarded for their platform users, with the liability and asset measured at the fair value of the crypto-assets. This differs from the accounting treatment of non-crypto-assets held in custody, which does not result in assets recorded on a custodian's balance sheet. We adopted the guidance in the third quarter of 2022. As of Dec. 31, 2022, we have recorded a *de minimis* asset and liability related to digital assets we safeguard.

Note 3–Acquisitions and dispositions

We sometimes structure our acquisitions and divestitures with both an initial payment or receipt and later contingent payments or receipts tied to post-closing revenue or income growth. There were no contingent payments or receipts in 2022. At Dec. 31, 2022, we are potentially obligated to pay additional consideration which, using reasonable assumptions and estimates, could range from $27 million to $45 million over the next two years. At Dec. 31, 2022, we could potentially receive additional consideration which, using reasonable assumptions and estimates, could be up to $390 million over the next five years.

Transactions in 2022

On Nov. 1, 2022, BNY Mellon completed the sale of BNY Alcentra Group Holdings, Inc. (together with its subsidiaries, "Alcentra") for $350 million cash consideration at close and contingent consideration dependent on the achievement of certain performance thresholds. We recorded an $11 million pre-tax loss and a $40 million after-tax loss on this transaction. At Oct. 31, 2022, Alcentra had $32 billion in assets under management ("AUM") concentrated in senior secured loans, high yield bonds, private credit, structured credit, special situations and multi-strategy credit strategies. In addition, goodwill related to Alcentra of $434 million was removed from the consolidated balance sheet as a result of this sale.

On Aug. 1, 2022, BNY Mellon completed the sale of HedgeMark Advisors, LLC ("HedgeMark"), and recorded a $37 million pre-tax gain. As part of the sale, BNY Mellon received an equity interest in the acquiring firm. In addition, goodwill related to HedgeMark of $13 million was removed from the consolidated balance sheet as result of this sale.

Transactions in 2021

On Oct. 1, 2021, BNY Mellon completed the acquisition of Milestone Group Pty Ltd., a business solutions provider for the funds industry, which is included in the Securities Services business segment.

On Oct. 29, 2021, BNY Mellon completed the acquisition of the depositary and custody activities of Nykredit, which is included in the Securities Services business segment.

On Dec. 23, 2021, BNY Mellon completed the acquisition of Optimal Asset Management, an investment advisor that developed patented software to deliver customized investment solutions for investors, particularly direct indexing solutions, which is included in the Market and Wealth Services business segment.

Goodwill and intangible assets related to the 2021 acquisitions totaled $99 million and $70 million, respectively.

Transactions in 2020

In the fourth quarter of 2020, BNY Mellon entered into agreements to sell two legal entities. Those sales closed in the first and third quarters of 2021. BNY Mellon recorded a total after-tax loss of $34 million on these transactions in the fourth quarter of 2020 and a $4 million gain in the third quarter of 2021.

Note 4–Securities

The following tables present the amortized cost, the gross unrealized gains and losses and the fair value of securities at Dec. 31, 2022 and Dec. 31, 2021.

Securities at Dec. 31, 2022		Gross unrealized		
(in millions)	Amortized cost	Gains	Losses	Fair value
Available-for-sale:				
U.S. Treasury	$ 32,103	$ 93	$ 2,663	$ 29,533
Sovereign debt/sovereign guaranteed	10,906	5	547	10,364
Agency residential mortgage-backed securities ("RMBS")	9,388	113	544	8,957
Agency commercial mortgage-backed securities ("MBS")	8,656	89	685	8,060
Supranational	8,129	4	399	7,734
Foreign covered bonds	6,041	3	286	5,758
Collateralized loan obligations ("CLOs")	5,446	1	104	5,343
Non-agency commercial MBS	3,334	—	357	2,977
U.S. government agencies	2,465	52	223	2,294
Foreign government agencies	2,363	1	123	2,241
Non-agency RMBS	2,197	43	211	2,029
Other asset-backed securities ("ABS")	1,443	—	124	1,319
State and political subdivisions	12	—	—	12
Other debt securities	1	—	—	1
Total securities available-for-sale *(a)(b)*	**$ 92,484**	**$ 404**	**$ 6,266**	**$ 86,622**
Held-to-maturity:				
Agency RMBS	$ 34,188	$ 1	$ 4,229	$ 29,960
U.S. Treasury	10,863	—	895	9,968
U.S. government agencies	4,206	—	534	3,672
Agency commercial MBS	4,014	—	411	3,603
Sovereign debt/sovereign guaranteed	1,388	—	76	1,312
CLOs	983	—	26	957
Supranational	443	—	25	418
Foreign government agencies	66	—	6	60
Non-agency RMBS	30	2	1	31
State and political subdivisions	13	—	2	11
Total securities held-to-maturity	**$ 56,194**	**$ 3**	**$ 6,205**	**$ 49,992**
Total securities	**$ 148,678**	**$ 407**	**$ 12,471**	**$ 136,614**

(a) The amortized cost of available-for-sale securities is net of the allowance for credit loss of $1 million. The allowance for credit loss primarily relates to non-agency RMBSs.

(b) Includes gross unrealized gains of $347 million and gross unrealized losses of $179 million recorded in accumulated other comprehensive income related to securities that were transferred from available-for-sale to held-to-maturity. The unrealized gains primarily relate to agency RMBS, U.S. Treasury securities and agency commercial MBS. The unrealized losses primarily relate to agency RMBS and U.S. Treasury securities. The unrealized gains and losses will be amortized into net interest revenue over the contractual lives of the securities.

Securities at Dec. 31, 2021		Gross unrealized		
(in millions)	Amortized cost	Gains	Losses	Fair value
Available-for-sale:				
U.S. Treasury	$ 28,966	$ 771	$ 328	$ 29,409
Agency RMBS	14,333	270	73	14,530
Sovereign debt/sovereign guaranteed	13,367	79	67	13,379
Agency commercial MBS	8,102	345	42	8,405
Supranational	7,599	24	50	7,573
Foreign covered bonds	6,236	25	23	6,238
CLOs	4,441	3	5	4,439
Non-agency commercial MBS	3,083	65	23	3,125
Non-agency RMBS	2,641	132	25	2,748
Foreign government agencies	2,694	9	17	2,686
U.S. government agencies	2,464	99	27	2,536
State and political subdivisions	2,543	11	40	2,514
Other ABS	2,205	7	22	2,190
Corporate bonds	2,099	19	52	2,066
Other debt securities	1	—	—	1
Total securities available-for-sale *(a)(b)*	$ 100,774	$ 1,859	$ 794	$ 101,839
Held-to-maturity:				
Agency RMBS	$ 36,167	$ 428	$ 388	$ 36,207
U.S. Treasury	11,617	36	103	11,550
Agency commercial MBS	4,068	41	52	4,057
U.S. government agencies	2,998	—	71	2,927
CLOs	983	—	1	982
Sovereign debt/sovereign guaranteed	922	18	2	938
Supranational	54	—	—	54
Non-agency RMBS	43	2	—	45
State and political subdivisions	14	1	—	15
Total securities held-to-maturity	$ 56,866	$ 526	$ 617	$ 56,775
Total securities	$ 157,640	$ 2,385	$ 1,411	$ 158,614

(a) The amortized cost of available-for-sale securities is net of the allowance for credit loss of $10 million. The allowance for credit loss primarily relates to CLOs.

(b) Includes gross unrealized gains of $455 million and gross unrealized losses of $75 million recorded in accumulated other comprehensive income related to securities that were transferred from available-for-sale to held-to-maturity. The unrealized gains primarily relate to U.S. Treasury securities, agency RMBS and agency commercial MBS. The unrealized losses primarily relate to U.S. Treasury securities and agency RMBS. The unrealized gains and losses will be amortized into net interest revenue over the contractual lives of the securities.

The following table presents the realized gains and losses, on a gross basis.

Net securities gains (losses)			
(in millions)	**2022**	2021	2020
Realized gross gains	**$ 92**	$ 28	$ 46
Realized gross losses	**(535)**	(23)	(13)
Total net securities (losses) gains	**$ (443)**	$ 5	$ 33

The following table presents pre-tax net securities (losses) gains by type.

Net securities gains (losses)			
(in millions)	**2022**	2021	2020
State and political subdivisions	**$ (337)**	$ —	$ —
Corporate bonds	**(177)**	(3)	1
Non-agency RMBS	**49**	2	(1)
U.S. Treasury	**12**	(3)	8
Supranational	**(2)**	1	7
Foreign government agencies	**(5)**	1	8
Other	**17**	7	10
Total net securities (losses) gains	**$ (443)**	$ 5	$ 33

In 2022, agency RMBS, U.S. government agencies and agency commercial MBS with an aggregate amortized cost of $6.2 billion and fair value of $6.1 billion were transferred from available-for-sale securities to held-to-maturity securities.

In 2021, U.S. Treasury securities, agency RMBS, agency commercial MBS, CLOs and U.S. government agencies with an aggregate amortized cost of $13.4 billion and fair value of $13.8 billion were transferred from available-for-sale securities to held-to-maturity securities.

The above transfers reduced the impact of changes in interest rates on accumulated other comprehensive income.

Allowance for credit losses – Securities

The allowance for credit losses related to securities was $1 million at Dec. 31, 2022 and related to non-agency RMBS. The allowance for credit losses related to securities was $10 million at Dec. 31, 2021, and primarily related to the available-for-sale CLO portfolio.

Credit quality indicators – Securities

At Dec. 31, 2022, the gross unrealized losses on the securities portfolio were primarily attributable to an increase in interest rates from the date of purchase, and for certain securities that were transferred from available-for-sale to held-to-maturity, an increase in interest rates through the date they were transferred. Specifically, $179 million of the unrealized losses at Dec. 31, 2022 and $75 million at Dec. 31, 2021 reflected in the tables below relate to certain securities that were previously transferred from available-for-sale to held-to-maturity. The unrealized

losses will be amortized into net interest revenue over the contractual lives of the securities. The transfer created a new cost basis for the securities. As a result, if these securities have experienced unrealized losses since the date of transfer, the corresponding unrealized losses would be reflected in the held-to-maturity securities portfolio in the following tables. We do not intend to sell these securities, and it is not more likely than not that we will have to sell these securities.

The following tables show the aggregate fair value of available-for-sale securities with 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 more without an allowance for credit losses.

Available-for-sale securities in an unrealized loss position without an allowance for credit losses at Dec. 31, 2022	Less than 12 months		12 months or more		Total	
(in millions)	Fair value	Unrealized losses	Fair value	Unrealized losses	Fair value	Unrealized losses
U.S. Treasury	$ 14,058	$ 824	$ 15,236	$ 1,839	$ 29,294	$ 2,663
Agency RMBS	7,929	376	789	168	8,718	544
Agency commercial MBS	6,088	389	1,878	296	7,966	685
Sovereign debt/sovereign guaranteed	4,176	184	3,788	363	7,964	547
Supranational	3,451	109	2,571	290	6,022	399
CLOs	4,806	94	403	10	5,209	104
Foreign covered bonds	2,830	83	1,977	203	4,807	286
Non-agency commercial MBS	1,914	201	932	156	2,846	357
Foreign government agencies	1,148	43	1,013	80	2,161	123
U.S. government agencies	1,710	186	208	37	1,918	223
Non-agency RMBS	588	16	1,148	193	1,736	209
Other ABS	333	18	876	106	1,209	124
State and political subdivisions	—	—	12	—	12	—
Total securities available-for-sale *(a)*	**$ 49,031**	**$ 2,523**	**$ 30,831**	**$ 3,741**	**$ 79,862**	**$ 6,264**

(a) Includes $120 million of gross unrealized losses for less than 12 months and $59 million of gross unrealized losses for 12 months or more recorded in accumulated other comprehensive income related to securities that were transferred from available-for-sale to held-to-maturity. The unrealized losses are primarily related to agency RMBS and U.S. Treasury securities and will be amortized into net interest revenue over the contractual lives of the securities.

Available-for-sale securities in an unrealized loss position without an allowance for credit losses at Dec. 31, 2021	Less than 12 months		12 months or more		Total	
(in millions)	Fair value	Unrealized losses	Fair value	Unrealized losses	Fair value	Unrealized losses
U.S. Treasury	$ 16,855	$ 235	$ 1,944	$ 93	$ 18,799	$ 328
Sovereign debt/sovereign guaranteed	6,040	66	58	1	6,098	67
Agency RMBS	4,089	44	457	29	4,546	73
Supranational	3,093	44	305	6	3,398	50
Agency commercial MBS	2,233	39	585	3	2,818	42
Foreign covered bonds	2,694	23	—	—	2,694	23
CLOs	1,808	3	318	2	2,126	5
Non-agency RMBS	1,573	20	345	5	1,918	25
State and political subdivisions	1,848	40	13	—	1,861	40
U.S. government agencies	1,780	27	—	—	1,780	27
Other ABS	1,383	20	201	2	1,584	22
Foreign government agencies	1,446	17	15	—	1,461	17
Corporate bonds	1,247	42	198	10	1,445	52
Non-agency commercial MBS	947	16	222	7	1,169	23
Total securities available-for-sale *(a)*	$ 47,036	$ 636	$ 4,661	$ 158	$ 51,697	$ 794

(a) Includes $47 million of gross unrealized losses for less than 12 months and $28 million of gross unrealized losses for 12 months or more recorded in accumulated other comprehensive income related to securities that were transferred from available-for-sale to held-to-maturity. The unrealized losses are primarily related to U.S. Treasury securities and agency RMBS and will be amortized into net interest revenue over the contractual lives of the securities.

The following tables show the credit quality of the held-to-maturity securities. We have included certain credit ratings information because the information can indicate the degree of credit risk to which we are exposed. Significant changes in ratings classifications could indicate increased credit risk for us and could be accompanied by an increase in the allowance for credit losses and/or a reduction in the fair value of our securities portfolio.

Held-to-maturity securities portfolio at Dec. 31, 2022				Ratings *(a)*				
(dollars in millions)	Amortized cost	Net unrealized gain (loss)	AAA/ AA-	A+/ A-	BBB+/ BBB-	BB+ and lower	Not rated
Agency RMBS	$ 34,188	$ (4,228)	100 %	— %	— %	— %	— %
U.S. Treasury	10,863	(895)	100	—	—	—	—
U.S. government agencies	4,206	(534)	100	—	—	—	—
Agency commercial MBS	4,014	(411)	100	—	—	—	—
Sovereign debt/sovereign guaranteed *(b)*	1,388	(76)	100	—	—	—	—
CLOs	983	(26)	100	—	—	—	—
Supranational	443	(25)	100	—	—	—	—
Foreign government agencies	66	(6)	100	—	—	—	—
Non-agency RMBS	30	1	22	58	2	17	1
State and political subdivisions	13	(2)	2	2	3	—	93
Total held-to-maturity securities	**$ 56,194**	**$ (6,202)**	**100 %**	**— %**	**— %**	**— %**	**— %**

(a) Represents ratings by Standard & Poor's ("S&P") or the equivalent.
(b) Primarily consists of exposure to Germany, UK and France.

Held-to-maturity securities portfolio at Dec. 31, 2021			Ratings *(a)*				
(dollars in millions)	Amortized cost	Net unrealized gain (loss)	AAA/ AA-	A+/ A-	BBB+/ BBB-	BB+ and lower	Not rated
Agency RMBS	$ 36,167	$ 40	100 %	— %	— %	— %	— %
U.S. Treasury	11,617	(67)	100	—	—	—	—
Agency commercial MBS	4,068	(11)	100	—	—	—	—
U.S. government agencies	2,998	(71)	100	—	—	—	—
CLOs	983	(1)	100	—	—	—	—
Sovereign debt/sovereign guaranteed *(b)*	922	16	100	—	—	—	—
Supranational	54	—	100	—	—	—	—
Non-agency RMBS	43	2	23	59	2	15	1
State and political subdivisions	14	1	5	2	5	—	88
Total held-to-maturity securities	$ 56,866	$ (91)	100 %	— %	— %	— %	— %

(a) Represents ratings by S&P or the equivalent.
(b) Primarily consists of exposure to France, UK and Germany.

Maturity distribution

The following table shows the maturity distribution by carrying amount and yield (on a tax equivalent basis) of our securities portfolio.

Maturity distribution and yields on securities at Dec. 31, 2022	Within 1 year		1-5 years		5-10 years		After 10 years		Total	
(dollars in millions)	Amount	Yield *(a)*	Amount	Yield *(a)*	Amount	Yield *(a)*	Amount	Yield *(a)*	Amount	Yield *(a)*
Available-for-sale:										
U.S. Treasury	$ 9,221	1.35 %	$ 11,658	1.52 %	$ 6,632	1.24 %	$ 2,022	2.92 %	**$ 29,533**	**1.51 %**
Sovereign debt/sovereign guaranteed	3,718	2.51	5,875	1.36	771	0.47	—	—	**10,364**	**1.68**
Supranational	1,392	1.85	4,860	2.45	1,469	2.60	13	2.82	**7,734**	**2.38**
Foreign covered bonds	1,219	2.02	4,085	2.41	454	0.26	—	—	**5,758**	**2.13**
Foreign government agencies	513	1.70	1,660	1.82	68	1.50	—	—	**2,241**	**1.78**
U.S. government agencies	20	2.99	1,164	2.87	947	2.80	163	2.54	**2,294**	**2.82**
State and political subdivisions	—	5.75	—	—	—	—	12	4.78	**12**	**4.79**
Other debt securities	—	—	—	—	—	—	1	3.42	**1**	**3.42**
Mortgage-backed securities:										
Agency RMBS									**8,957**	**4.08**
Non-agency RMBS									**2,029**	**3.79**
Agency commercial MBS									**8,060**	**2.82**
Non-agency commercial MBS									**2,977**	**3.24**
CLOs									**5,343**	**5.44**
Other ABS									**1,319**	**2.14**
Total securities available-for-sale	$ 16,083	1.72 %	$ 29,302	1.83 %	$ 10,341	1.46 %	$ 2,211	2.90 %	**$ 86,622**	**2.43 %**
Held-to-maturity:										
U.S. Treasury	$ 1,728	1.71 %	$ 7,737	1.34 %	$ 1,398	1.20 %	$ —	— %	**$ 10,863**	**1.38 %**
U.S. government agencies	50	0.74	2,605	1.38	1,290	1.66	261	1.90	**4,206**	**1.49**
Sovereign debt/sovereign guaranteed	36	0.03	1,250	0.88	102	1.06	—	—	**1,388**	**0.87**
Foreign government agencies	—	—	66	0.79	—	—	—	—	**66**	**0.79**
Supranational	48	0.54	395	1.01	—	—	—	—	**443**	**0.96**
State and political subdivisions	1	5.59	—	—	4	4.65	8	4.80	**13**	**4.83**
Mortgage-backed securities:										
Agency RMBS									**34,188**	**2.31**
Non-agency RMBS									**30**	**2.41**
Agency commercial MBS									**4,014**	**2.34**
CLOs									**983**	**5.34**
Total securities held-to-maturity	$ 1,863	1.62 %	$ 12,053	1.28 %	$ 2,794	1.41 %	$ 269	1.98 %	**$ 56,194**	**2.07 %**
Total securities	$ 17,946	1.71 %	$ 41,355	1.68 %	$ 13,135	1.45 %	$ 2,480	2.81 %	**$ 142,816**	**2.30 %**

(a) Yields are based upon the amortized cost of securities and consider the contractual coupon, amortization of premiums and accretion of discounts, excluding the effect of related hedging derivatives.

Pledged assets

At Dec. 31, 2022, BNY Mellon had pledged assets of $138 billion, including $106 billion pledged as collateral for potential borrowings at the Federal Reserve Discount Window and $8 billion pledged as collateral for borrowing at the Federal Home Loan Bank. The components of the assets pledged at Dec. 31, 2022 included $121 billion of securities, $12 billion of loans, $4 billion of trading assets and $1 billion of interest-bearing deposits with banks.

If there has been no borrowing at the Federal Reserve Discount Window, the Federal Reserve generally allows banks to freely move assets in and out of their pledged assets account to sell or repledge the assets for other purposes. BNY Mellon regularly moves assets in and out of its pledged assets account at the Federal Reserve.

At Dec. 31, 2021, BNY Mellon had pledged assets of $144 billion, including $112 billion pledged as collateral for potential borrowing at the Federal Reserve Discount Window and $7 billion pledged as collateral for borrowing at the Federal Home Loan Bank. The components of the assets pledged at Dec. 31, 2021 included $126 billion of securities, $12 billion of loans, $5 billion of trading assets and $1 billion of interest-bearing deposits with banks.

At Dec. 31, 2022 and Dec. 31, 2021, pledged assets included $24 billion and $24 billion, respectively, for which the recipients were permitted to sell or repledge the assets delivered.

We also obtain securities as collateral, including receipts under resale agreements, securities borrowed, derivative contracts and custody agreements, on terms which permit us to sell or repledge the securities to others. At Dec. 31, 2022 and Dec. 31, 2021, the market value of the securities received that can be sold or repledged was $115 billion and $122 billion, respectively. We routinely sell or repledge these securities through delivery to third parties. As of Dec. 31, 2022 and Dec. 31, 2021, the market value of securities collateral sold or repledged was $78 billion and $78 billion, respectively.

Restricted cash and securities

Cash and securities may be segregated under federal and other regulations or requirements. At Dec. 31, 2022 and Dec. 31, 2021, cash segregated under federal and other regulations or requirements was $7 billion and $4 billion, respectively. Restricted cash is primarily included in interest-bearing deposits with banks on the consolidated balance sheet. Securities segregated under federal and other regulations or requirements were $3 billion at Dec. 31, 2022 and $4 billion at Dec. 31, 2021. Restricted securities were sourced from securities purchased under resale agreements and are included in federal funds sold and securities purchased under resale agreements on the consolidated balance sheet.

Note 5–Loans and asset quality

Loans

The table below provides the details of our loan portfolio.

Loans	Dec. 31,	
(in millions)	**2022**	2021
Commercial	**$ 1,732**	$ 2,128
Commercial real estate	**6,226**	6,033
Financial institutions	**9,684**	10,232
Lease financings	**657**	731
Wealth management loans	**10,302**	9,792
Wealth management mortgages	**8,966**	8,200
Other residential mortgages	**345**	299
Capital call financing	**3,438**	2,284
Other	**2,941**	2,541
Overdrafts	**4,839**	3,060
Margin loans	**16,933**	22,487
Total loans *(a)*	**$ 66,063**	$ 67,787

(a) Net of unearned income of $225 million at Dec. 31, 2022 and $240 million at Dec. 31, 2021, primarily related to lease financings.

We disclose information related to our loans and asset quality by the class of financing receivable in the following tables.

Allowance for credit losses

Activity in the allowance for credit losses on loans and lending-related commitments is presented below. This does not include activity in the allowance for credit losses related to other financial instruments, including cash and due from banks, interest-bearing deposits with banks, federal funds sold and securities purchased under resale agreements, held-to-maturity securities, available-for-sale securities and accounts receivable.

Allowance for credit losses activity for the year ended Dec. 31, 2022 *(a)* *(in millions)*	Commercial	Commercial real estate	Financial institutions	Lease financings	Wealth management loans	Wealth management mortgages	Other residential mortgages	Capital call financing	Total
Beginning balance	$ 12	$ 199	$ 13	$ 1	$ 1	$ 6	$ 7	$ 2	241
Charge-offs	—	—	—	—	—	—	—	—	—
Recoveries	—	—	—	—	—	—	4	—	4
Net recoveries	—	—	—	—	—	—	4	—	4
Provision *(b)*	6	(15)	11	—	—	6	(3)	4	9
Ending balance	**$ 18**	**$ 184**	**$ 24**	**$ 1**	**$ 1**	**$ 12**	**$ 8**	**$ 6**	**254**
Allowance for:									
Loan losses	$ 4	$ 137	$ 10	$ 1	$ 1	$ 11	$ 8	$ 4	176
Lending-related commitments	14	47	14	—	—	1	—	2	78
Individually evaluated for impairment:									
Loan balance *(c)*	$ —	$ 62	$ —	$ —	$ —	$ 16	$ 1	$ —	79
Allowance for loan losses	—	—	—	—	—	—	—	—	—

(a) There was no activity in the other loan portfolio.
(b) Does not include provision for credit losses related to other financial instruments of $30 million for the year ended Dec. 31, 2022.
(c) Includes collateral dependent loans of $79 million with $126 million of collateral at fair value.

Allowance for credit losses activity for the year ended Dec. 31, 2021 *(in millions)*	Commercial	Commercial real estate	Financial institutions	Lease financings	Wealth management loans	Wealth management mortgages	Other residential mortgages	Capital call financing	Other	Total
Beginning balance	$ 16	$ 430	$ 10	$ 2	$ 1	$ 7	$ 13	$ —	$ —	479
Charge-offs	—	—	—	—	—	(1)	(1)	—	(16)	(18)
Recoveries	—	—	2	—	—	—	6	—	—	8
Net recoveries	—	—	2	—	—	(1)	5	—	(16)	(10)
Provision *(a)*	(4)	(231)	1	(1)	—	—	(11)	2	16	(228)
Ending balance	$ 12	$ 199	$ 13	$ 1	$ 1	$ 6	$ 7	$ 2	$ —	241
Allowance for:										
Loan losses	$ 3	$ 171	$ 6	$ 1	$ 1	$ 5	$ 7	$ 2	$ —	196
Lending-related commitments	9	28	7	—	—	1	—	—	—	45
Individually evaluated for impairment:										
Loan balance *(b)*	$ —	$ 111	$ —	$ —	$ —	$ 18	$ 1	$ —	$ —	130
Allowance for loan losses	—	5	—	—	—	—	—	—	—	5

(a) Does not include provision for credit losses benefit related to other financial instruments of $3 million for the year ended Dec. 31, 2021.
(b) Includes collateral dependent loans of $130 million with $149 million of collateral at fair value.

Allowance for credit losses activity for the year ended Dec. 31, 2020 *(a)* *(in millions)*	Commercial	Commercial real estate	Financial institutions	Lease financing	Wealth management loans	Wealth management mortgages	Other residential mortgages	Foreign *(b)*	Total
Beginning at Dec. 31, 2019	$ 60	$ 76	$ 20	$ 3	$ 5	$ 15	$ 13	$ 24	216
Impact of adopting ASU 2016-13	(43)	14	(6)	—	(5)	(7)	2	(24)	(69)
Balance at Jan. 1, 2020	17	90	14	3	—	8	15	—	147
Charge-offs	—	—	—	—	—	—	(1)	—	(1)
Recoveries	—	—	—	—	—	—	5	—	5
Net (charge-offs) recoveries	—	—	—	—	—	—	4	—	4
Provision	(1)	340	(4)	(1)	1	(1)	(6)	—	328
Ending balance	$ 16	$ 430	$ 10	$ 2	$ 1	$ 7	$ 13	$ —	479
Allowance for:									
Loan losses	$ 6	$ 324	$ 6	$ 2	$ 1	$ 6	$ 13	$ —	358
Lending-related commitments	10	106	4	—	—	1	—	—	121
Individually evaluated for impairment:									
Loan balance *(d)*	$ —	$ —	$ —	$ —	$ —	$ 20	$ —	$ —	20
Allowance for loan losses	—	—	—	—	—	—	—	—	—

(a) There was no activity in the capital call and other loan portfolios.
(b) The allowance related to foreign exposure has been reclassified to financial institutions ($10 million), commercial ($10 million) and lease financings ($4 million).
(c) Does not include provision for credit losses related to other financial instruments of $8 million for the year ended Dec. 31, 2020.
(d) Includes collateral dependent loans of $20 million with $30 million of collateral at fair value.

Nonperforming assets

The table below presents our nonperforming assets.

Nonperforming assets	**Dec. 31, 2022**			Dec. 31, 2021		
	Recorded investment			Recorded investment		
(in millions)	With an allowance	Without an allowance	Total	With an allowance	Without an allowance	Total
Nonperforming loans:						
Other residential mortgages	**$ 30**	**$ 1**	**$ 31**	$ 38	$ 1	$ 39
Wealth management mortgages	**8**	**14**	**22**	8	17	25
Commercial real estate	**—**	**54**	**54**	12	42	54
Total nonperforming loans	**38**	**69**	**107**	58	60	118
Other assets owned	**—**	**2**	**2**	—	2	2
Total nonperforming assets	**$ 38**	**$ 71**	**$ 109**	$ 58	$ 62	$ 120

Past due loans

The table below presents our past due loans.

Past due loans and still accruing interest	**Dec. 31, 2022**				Dec. 31, 2021			
	Days past due			Total	Days past due			Total
(in millions)	30-59	60-89	≥90	past due	30-59	60-89	≥90	past due
Wealth management mortgages	**$ 54**	**$ 1**	**$ —**	**$ 55**	$ 24	$ —	$ —	$ 24
Wealth management loans	**43**	**1**	**—**	**44**	33	—	—	33
Commercial real estate	**11**	**—**	**—**	**11**	3	—	—	3
Other residential mortgages	**5**	—	—	**5**	2	1	—	3
Financial institutions	**—**	**—**	**—**	**—**	31	—	—	31
Total past due loans	**$ 113**	**$ 2**	**$ —**	**$ 115**	$ 93	$ 1	$ —	$ 94

Loan modifications

A modified loan is considered a troubled debt restructuring ("TDR") if the debtor is experiencing financial difficulties and the creditor grants a concession to the debtor that would not otherwise be considered. A TDR may include a transfer of real estate or other assets from the debtor to the creditor, or a modification of the term of the loan. Not all modified loans are considered TDRs. We modified 10 loans in 2022 with an aggregate recorded investment of $14 million. The modifications of the other residential and commercial real estate loans in 2022 consisted of reducing the stated interest rates and, in certain cases, forbearance of default and extending the maturity dates.

Due to the coronavirus pandemic, there were two forms of relief provided for classifying loans as TDRs: The Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act"), the relevant provisions of which were extended by the Consolidated Appropriations Act, 2021, and the Interagency Guidance. The extension period ended Jan. 1, 2022. See Note 1 for additional details. During 2021 and 2020, we modified loans under the CARES Act or Interagency Guidance by providing short-term loan payment forbearances or modified principal and/or interest payments. These loans were primarily residential mortgage and commercial real estate loans. We did not identify any of the modifications as TDRs. The unpaid principal balance of the loans modified under the CARES Act or Interagency Guidance was $73 million at Dec. 31, 2022 and $150 million at Dec. 31, 2021.

Credit quality indicators

Our credit strategy is to focus on investment-grade clients that are active users of our non-credit services. Each customer is assigned an internal credit rating, which is mapped to an external rating agency grade equivalent, if possible, based upon a number of dimensions, which are continually evaluated and may change over time.

The tables below provide information about the credit profile of the loan portfolio by the period of origination.

Credit profile of the loan portfolio							Dec. 31, 2022			
							Revolving loans			
	Originated, at amortized cost									
(in millions)	**2022**	2021	2020	2019	2018	Prior to 2018	Amortized cost	Converted to term loans – Amortized cost	Total *(a)*	Accrued interest receivable
Commercial:										
Investment grade	**$ 379**	$ 148	$ —	$ —	$ 43	$ 45	**$ 963**	**$ —**	**$ 1,578**	
Non-investment grade	**78**	6	—	—	—	—	**70**	**—**	**154**	
Total commercial	**457**	154	—	—	43	45	**1,033**	**—**	**1,732**	**$ 2**
Commercial real estate:										
Investment grade	**1,265**	973	407	739	204	904	**183**	**—**	**4,675**	
Non-investment grade	**431**	511	145	323	93	6	**20**	**22**	**1,551**	
Total commercial real estate	**1,696**	1,484	552	1,062	297	910	**203**	**22**	**6,226**	**25**
Financial institutions:										
Investment grade	**126**	389	—	—	—	25	**7,216**	**—**	**7,756**	
Non-investment grade	**20**	—	—	—	—	—	**1,896**	**12**	**1,928**	
Total financial institutions	**146**	389	—	—	—	25	**9,112**	**12**	**9,684**	**78**
Wealth management loans										
Investment grade	**45**	57	22	45	—	217	**9,887**	**—**	**10,273**	
Non-investment grade	**—**	—	—	—	—	—	**29**	**—**	**29**	
Total wealth management loans	**45**	57	22	45	—	217	**9,916**	**—**	**10,302**	**49**
Wealth management mortgages	**1,775**	1,976	918	775	485	3,012	**25**	**—**	**8,966**	**20**
Lease financings	**17**	—	49	11	7	573	**—**	**—**	**657**	**—**
Other residential mortgages	**27**	70	—	—	—	248	**—**	**—**	**345**	**1**
Capital call financing	**—**	—	—	—	—	—	**3,438**	—	**3,438**	**17**
Other loans	**—**	—	—	—	—	—	**2,941**	**—**	**2,941**	**6**
Margin loans	**5,984**	—	—	—	—	—	**10,949**	**—**	**16,933**	**33**
Total loans	**$ 10,147**	$ 4,130	$ 1,541	$ 1,893	$ 832	$ 5,030	**$ 37,617**	**$ 34**	**$ 61,224**	**$ 231**

(a) Excludes overdrafts of $4,839 million. Overdrafts occur on a daily basis primarily in the custody and securities clearance business and are generally repaid within two business days.

Credit profile of the loan portfolio	Dec. 31, 2021									
	Originated, at amortized cost						Revolving loans			
(in millions)	2021	2020	2019	2018	2017	Prior to 2017	Amortized cost	Converted to term loans – Amortized cost	Total *(a)*	Accrued interest receivable
Commercial:										
Investment grade	$ 348	$ 20	$ —	$ 8	$ 145	$ —	$ 1,450	$ —	$ 1,971	
Non-investment grade	81	—	—	—	—	—	76	—	157	
Total commercial	429	20	—	8	145	—	1,526	—	2,128	$ 1
Commercial real estate:										
Investment grade	1,577	528	683	173	298	601	205	—	4,065	
Non-investment grade	660	97	568	351	50	95	121	26	1,968	
Total commercial real estate	2,237	625	1,251	524	348	696	326	26	6,033	7
Financial institutions:										
Investment grade	705	—	—	—	—	60	8,015	—	8,780	
Non-investment grade	20	—	—	—	—	—	1,432	—	1,452	
Total financial institutions	725	—	—	—	—	60	9,447	—	10,232	11
Wealth management loans										
Investment grade	117	18	73	6	104	122	9,320	—	9,760	
Non-investment grade	1	—	—	—	—	—	31	—	32	
Total wealth management loans	118	18	73	6	104	122	9,351	—	9,792	12
Wealth management mortgages	2,058	1,008	855	542	885	2,838	14	—	8,200	14
Lease financings	25	67	15	10	2	612	—	—	731	—
Other residential mortgages	—	—	—	—	—	299	—	—	299	1
Capital call financing	—	—	—	—	—	—	2,284	—	2,284	3
Other loans	—	—	—	—	—	—	2,541	—	2,541	2
Margin loans	7,697	—	—	—	—	—	14,790	—	22,487	10
Total loans	$ 13,289	$ 1,738	$ 2,194	$ 1,090	$ 1,484	$ 4,627	$ 40,279	$ 26	$ 64,727	$ 61

(a) Excludes overdrafts of $3,060 million. Overdrafts occur on a daily basis primarily in the custody and securities clearance business and are generally repaid within two business days.

Commercial loans

The commercial loan portfolio is divided into investment grade and non-investment grade categories based on the assigned internal credit ratings, which are generally consistent with those of the public rating agencies. Customers with ratings consistent with BBB- (S&P)/Baa3 (Moody's) or better are considered to be investment grade. Those clients with ratings lower than this threshold are considered to be non-investment grade.

Commercial real estate

Our income-producing commercial real estate facilities are focused on experienced owners and are structured with moderate leverage based on existing cash flows. Our commercial real estate lending activities also include construction and renovation facilities.

Financial institutions

Financial institution exposures are high-quality, with 95% of the exposures meeting the investment grade equivalent criteria of our internal credit rating classification at Dec. 31, 2022. In addition, 64% of the financial institutions exposure is secured. For example, securities industry clients and asset managers often borrow against marketable securities held in custody. The exposure to financial institutions is generally short-term, with 85% expiring within one year.

Wealth management loans

Wealth management loans are not typically rated by external rating agencies. A majority of the wealth management loans are secured by the customers' investment management accounts or custody accounts. Eligible assets pledged for these loans are typically investment grade fixed-income securities, equities and/or mutual funds. Internal ratings for this portion of the wealth management loan portfolio, therefore, would equate to investment grade external

ratings. Wealth management loans are provided to select customers based on the pledge of other types of assets. For the loans collateralized by other assets, the credit quality of the obligor is carefully analyzed, but we do not consider this portion of wealth management loan portfolio to be investment grade.

Wealth management mortgages

Credit quality indicators for wealth management mortgages are not correlated to external ratings. Wealth management mortgages are typically loans to high-net-worth individuals, which are secured primarily by residential property. These loans are primarily interest-only, adjustable rate mortgages with a weighted-average loan-to-value ratio of 61% at origination. Delinquency rate is a key indicator of credit quality in the wealth management portfolio. At Dec. 31, 2022, less than 1% of the mortgages were past due.

At Dec. 31, 2022, the wealth management mortgage portfolio consisted of the following geographic concentrations: California – 22%; New York – 15%; Florida – 10%; Massachusetts – 8%; and other – 45%.

Lease financings

At Dec. 31, 2022, the lease financings portfolio consisted of exposures backed by well-diversified assets, primarily real estate and large-ticket transportation equipment. The largest components of our lease residual value exposure were to aircraft and freight-related rail cars. Assets are both domestic and foreign-based, with primary concentrations in Germany and the U.S.

Other residential mortgages

The other residential mortgage portfolio primarily consists of 1-4 family residential mortgage loans and totaled $345 million at Dec. 31, 2022 and $299 million at Dec. 31, 2021. Included in this portfolio at Dec. 31, 2022 were $97 million of fixed rate jumbo mortgage loans purchased in 2022 with a weighted-average loan-to-value ratio of 70% at origination. These loans are not typically correlated to external ratings.

Capital call financing

Capital call financing includes loans to private equity funds that are secured by the fund investors' capital commitments and the funds' right to call capital.

Other loans

Other loans primarily include loans to consumers that are fully collateralized with equities, mutual funds and fixed-income securities.

Margin loans

We had $16.9 billion of secured margin loans at Dec. 31, 2022, compared with $22.5 billion at Dec. 31, 2021. Margin loans are collateralized with marketable securities, and borrowers are required to maintain a daily collateral margin in excess of 100% of the value of the loan. We have rarely suffered a loss on these types of loans.

Overdrafts

Overdrafts primarily relate to custody and securities clearance clients and totaled $4.8 billion at Dec. 31, 2022 and $3.1 billion at Dec. 31, 2021. Overdrafts occur on a daily basis and are generally repaid within two business days.

Reverse repurchase agreements

Reverse repurchase agreements at Dec. 31, 2022 and Dec. 31, 2021 were fully secured with high-quality collateral. As a result, there was no allowance for credit losses related to these assets at Dec. 31, 2022 and Dec. 31, 2021.

Note 6–Leasing

We have operating and finance leases for corporate offices, data centers and certain equipment. Our leases have remaining lease terms up to 16 years, some of which include options to extend or terminate the lease. In some of our corporate office locations, we may enter into sublease arrangements for portions or all of the space and/or lease term.

The table below presents the consolidated balance sheet information related to operating and finance leases.

Balance sheet information	**Dec. 31, 2022**			Dec. 31, 2021		
(dollars in millions)	Operating leases	Finance leases	Total	Operating leases	Finance leases	Total
ROU assets *(a)*	**$ 1,152**	**$ 11**	**$ 1,163**	$ 1,250	$ 34	$ 1,284
Lease liability *(b)*	**$ 1,336**	**$ —**	**$ 1,336**	$ 1,461	$ 24	$ 1,485
Weighted average:						
Remaining lease term	**10.0 years**	**0.8 years**		10.5 years	0.9 years	
Discount rate *(annualized)*	**2.68 %**	**1.27 %**		2.62 %	0.97 %	

(a) Included in premises and equipment on the consolidated balance sheet.
(b) Operating lease liabilities are included in other liabilities and finance lease liabilities are included in other borrowed funds, both on the consolidated balance sheet.

The table below presents the components of lease expense.

Lease expense	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Operating lease expense	**$ 224**	$ 236	$ 263
Variable lease expense	**36**	39	47
Sublease income	**(33)**	(33)	(35)
Finance lease expense:			
Amortization of ROU assets	**6**	3	1
Total lease expense	**$ 233**	$ 245	$ 276

The table below presents cash flow information related to leases.

Cash flow information	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Cash paid for amounts included in measurement of liabilities:			
Operating cash flows from operating leases	**$ 224**	$ 260	$ 284
Financing cash flows from finance leases	**$ 23**	$ 13	$ 1

See Note 26 for information on non-cash operating and/or finance lease transactions.

The table below presents the maturities of lease liabilities.

Maturities of lease liabilities *(in millions)*	Operating leases
For the year ended Dec. 31,	
2023	$ 202
2024	163
2025	155
2026	156
2027	140
2028 and thereafter	708
Total lease payments	1,524
Less: Imputed interest	188
Total	$ 1,336

Note 7–Goodwill and intangible assets

Goodwill

The table below provides a breakdown of goodwill by business segment.

Goodwill by business segment *(in millions)*	Securities Services	Market and Wealth Services	Investment and Wealth Management	Consolidated
Balance at Dec. 31, 2020	$ 7,033	1,423	$ 9,040	$ 17,496
Acquisitions (dispositions)	87	12	(5)	94
Foreign currency translation	(58)	—	(20)	(78)
Balance at Dec. 31, 2021	$ 7,062	$ 1,435	$ 9,015	$ 17,512
Impairment losses	—	—	(680)	(680)
Dispositions	(13)	—	(434)	(447)
Foreign currency translation	(76)	(11)	(148)	(235)
Balance at Dec. 31, 2022				
Goodwill	6,973	1,424	8,433	16,830
Accumulated impairment losses	—	—	(680)	(680)
Net goodwill	**$ 6,973**	**$ 1,424**	**$ 7,753**	**$ 16,150**

Total goodwill decreased in 2022 compared with 2021 primarily reflecting the goodwill impairment loss recorded in the third quarter of 2022, dispositions and foreign currency translation.

Goodwill impairment testing

The goodwill impairment test is performed at least annually at the reporting unit level. BNY Mellon's business segments include six reporting units for which goodwill impairment testing is performed. As a result of the annual goodwill impairment test conducted in the second quarter of 2022, no goodwill impairment was recognized.

Determining the fair value of a reporting unit is subject to uncertainty as it is reliant on estimates of cash flows that extend far into the future, and, by their nature, are difficult to estimate over such an extended time frame. In the future, changes in the assumptions or the discount rate could produce a material non-cash goodwill impairment.

An interim test is performed when events or circumstances occur that may indicate that it is more likely than not that the fair value of any reporting unit may be less than its carrying value.

In the third quarter 2022, due to decreases in market values and the related outlook as well as increased market interest rates, we performed an interim goodwill impairment test of the Investment Management reporting unit which had $7.0 billion of allocated goodwill. The fair value of the Investment Management reporting unit was determined to be 7% below its carrying value, resulting in a goodwill impairment charge of $680 million. This goodwill impairment represents a non-cash charge and did not affect BNY Mellon's liquidity position, tangible common equity or regulatory capital ratios. The cash flow estimates for the Investment Management reporting unit are impacted by projections of the level and mix of assets under management, market values, operating margins and long-term growth rates.

We determined the fair value of the Investment Management reporting unit using an income approach based on management's projections as of Sept 30, 2022. The discount rate applied to these cash flows was 10.5% compared with the 10% discount rate used in the annual impairment test conducted in the second quarter of 2022. The increase was driven by a higher risk free rate. In the third quarter of 2022, we determined it was not necessary to perform an interim goodwill impairment test for our other reporting units.

In the fourth quarter of 2022, due to results of the third quarter 2022 interim impairment test and the macroeconomic conditions, we performed an additional interim goodwill impairment test of the Investment Management reporting unit, which had $6.0 billion of allocated goodwill after the sale of Alcentra on Nov. 1, 2022. No additional goodwill impairment was recognized.

Intangible assets

The table below provides a breakdown of intangible assets by business segment.

Intangible assets – net carrying amount by business segment *(in millions)*	Securities Services	Market and Wealth Services	Investment and Wealth Management	Other	Consolidated
Balance at Dec. 31, 2020	$ 194	$ 414	$ 1,555	$ 849	$ 3,012
Acquisitions (dispositions)	70	—	(6)	—	64
Amortization	(32)	(21)	(29)	—	(82)
Foreign currency translation	(2)	(1)	—	—	(3)
Balance at Dec. 31, 2021	$ 230	$ 392	$ 1,520	$ 849	$ 2,991
Disposition	—	—	(1)	—	(1)
Amortization	(33)	(8)	(26)	—	(67)
Foreign currency translation	(4)	—	(18)	—	(22)
Balance at Dec. 31, 2022	**$ 193**	**$ 384**	**$ 1,475**	**$ 849**	**2,901**

Intangible assets decreased in 2022 compared with 2021, primarily reflecting amortization and foreign currency translation.

The table below provides a breakdown of intangible assets by type.

Intangible assets	**Dec. 31, 2022**				Dec. 31, 2021		
(dollars in millions)	Gross carrying amount	Accumulated amortization	Net carrying amount	Remaining weighted-average amortization period	Gross carrying amount	Accumulated amortization	Net carrying amount
Subject to amortization: *(a)*							
Customer contracts—Securities Services	**$ 731**	**$ (539)**	**$ 192**	**11 years**	$ 747	$ (518)	$ 229
Customer contracts—Market and Wealth Services	**280**	**(267)**	**13**	**3 years**	378	(356)	22
Customer relationships—Investment and Wealth Management	**553**	**(461)**	**92**	**8 years**	568	(456)	112
Other	**41**	**(9)**	**32**	**14 years**	47	(8)	39
Total subject to amortization	**1,605**	**(1,276)**	**329**	**10 years**	1,740	(1,338)	402
Not subject to amortization: *(b)*							
Tradenames	**1,290**	**N/A**	**1,290**	**N/A**	1,294	N/A	1,294
Customer relationships	**1,282**	**N/A**	**1,282**	**N/A**	1,295	N/A	1,295
Total not subject to amortization	**2,572**	**N/A**	**2,572**	**N/A**	2,589	N/A	2,589
Total intangible assets	**$ 4,177**	**$ (1,276)**	**$ 2,901**	**N/A**	$ 4,329	$ (1,338)	$ 2,991

(a) Excludes fully amortized intangible assets.
(b) Intangible assets not subject to amortization have an indefinite life.
N/A – Not applicable.

Estimated annual amortization expense for current intangibles for the next five years is as follows:

For the year ended Dec. 31,	Estimated amortization expense *(in millions)*
2023	$ 57
2024	49
2025	43
2026	34
2027	28

Intangible asset impairment testing

Intangible assets not subject to amortization are tested for impairment annually or more often if events or circumstances indicate they may be impaired.

Note 8–Other assets

The following table provides the components of other assets presented on the consolidated balance sheet.

Other assets	Dec. 31,	
(in millions)	**2022**	2021
Corporate/bank-owned life insurance	**$ 5,417**	$ 5,359
Accounts receivable	**4,924**	4,178
Fails to deliver	**2,569**	1,561
Software	**2,260**	2,096
Prepaid pension assets	**1,651**	1,946
Qualified affordable housing project investments	**1,298**	1,153
Cash collateral receivable on derivative transactions	**1,014**	304
Renewable energy investments	**871**	1,027
Equity method investments	**803**	939
Prepaid expense	**764**	476
Other equity investments *(a)*	**695**	449
Income taxes receivable	**481**	538
Federal Reserve Bank stock	**478**	472
Fair value of hedging derivatives	**319**	206
Seed capital *(b)*	**218**	357
Assets of consolidated investment management funds	**209**	462
Other *(c)*	**1,884**	886
Total other assets	**$ 25,855**	$ 22,409

(a) Includes strategic equity, private equity and other investments.
(b) Includes investments in BNY Mellon funds which hedge deferred incentive awards.
(c) At Dec. 31, 2022 and Dec. 31, 2021, other assets include $6 million and $7 million, respectively, of Federal Home Loan Bank stock, at cost.

Non-readily marketable equity securities

Non-readily marketable equity securities do not have readily determinable fair values. These investments are valued using a measurement alternative where the investments are carried at cost, less any impairment, and plus or minus changes resulting from observable price changes in orderly transactions for an identical or similar investment of the same issuer. The observable price changes are recorded in investment and other revenue on the consolidated income statement. Our non-readily marketable equity securities totaled $445 million at Dec. 31, 2022 and $264 million at Dec. 31, 2021 and are included in other equity investments in the table above.

The following table presents the adjustments on the non-readily marketable equity securities.

Adjustments on non-readily marketable equity securities

(in millions)	**2022**	2021	2020	Life-to-date
Upward adjustments	**$ 125**	$ 105	$ 21	$ 283
Downward adjustments	**(8)**	—	—	(12)
Net adjustments	**$ 117**	$ 105	$ 21	$ 271

Qualified affordable housing project investments

We invest in affordable housing projects primarily to satisfy the Company's requirements under the Community Reinvestment Act. Our total investment in qualified affordable housing projects totaled $1.3 billion at Dec. 31, 2022 and $1.2 billion at Dec. 31, 2021. Commitments to fund future investments in qualified affordable housing projects totaled $614 million at Dec. 31, 2022 and $543 million at Dec. 31, 2021 and are recorded in other liabilities on the consolidated balance sheet. A summary of the commitments to fund future investments is as follows: 2023 – $239 million; 2024 – $135 million; 2025 – $172 million; 2026 – $24 million; 2027 – $1 million; and 2028 and thereafter – $43 million.

Tax credits and other tax benefits recognized were $145 million in 2022, $148 million in 2021 and $137 million in 2020.

Amortization expense included in the provision for income taxes was $123 million in 2022, $124 million in 2021 and $113 million in 2020.

Investments valued using net asset value ("NAV") per share

In our Investment and Wealth Management business segment, we make seed capital investments in certain funds we manage. We also hold private equity investments, primarily small business investment companies ("SBICs"), which are compliant with the Volcker Rule, and certain other corporate investments. Seed capital, private equity and other corporate investments are included in other assets on the consolidated balance sheet. The fair value of certain of these investments was estimated using the NAV per share for our ownership interest in the funds.

The table below presents information on our investments valued using NAV.

Investments valued using NAV	**Dec. 31, 2022**		Dec. 31, 2021	
(in millions)	Fair value	Unfunded commitments	Fair value	Unfunded commitments
Seed capital *(a) (b)*	**$ 3**	**$ —**	$ 101	$ 21
Private equity investments *(c)*	**130**	**53**	113	61
Other	**5**	**—**	4	—
Total	**$ 138**	**$ 53**	$ 218	$ 82

(a) Seed capital investments at Dec. 31, 2022 are generally redeemable on request. Distributions are received as the underlying investments in the funds, which have redemption notice periods of seven days, are liquidated. At Dec. 31, 2021, seed capital investments primarily include leveraged loans and structured credit funds, which are generally not redeemable. Distributions from such investments will be received as the underlying investments in the funds, which have lives of three to 11 years, are liquidated.

(b) Includes investments in funds that relate to deferred compensation arrangements with employees.

(c) Private equity investments primarily include Volcker Rule-compliant investments in SBICs that invest in various sectors of the economy. Private equity investments do not have redemption rights. Distributions from such investments will be received as the underlying investments in the private equity investments, which have a life of 10 years, are liquidated.

Note 9–Deposits

Time deposits in denominations of $250,000 or more totaled $1.4 billion at Dec. 31, 2022 and $549 million at Dec. 31, 2021.

At Dec. 31, 2022, the scheduled maturities of total time deposits are $1.4 billion in 2023, $143 million in 2024 and less than $1 million in 2025. No time deposits are scheduled to mature after 2025.

Note 10–Contract revenue

Fee and other revenue in the Securities Services, Market and Wealth Services and Investment and Wealth Management business segments is primarily variable, based on levels of assets under custody and/or administration ("AUC/A"), AUM and the level of client-driven transactions, as specified in fee schedules.

Investment services fees are based primarily on the market value of AUC/A; client accounts, balances and the volume of transactions; securities lending volume and spreads; and fees for other services. Certain fees based on the market value of assets are calculated in arrears on a monthly or quarterly basis.

Investment services fees also include transaction-based fees, which are driven by customer actions and are delivered at a point-in-time. These transaction-based fees are generally recognized on trade date. Other contractual investment services fees are driven by the amount of AUC/A or the number of accounts or securities positions and are billed on a monthly or quarterly basis.

Substantially all services within the Securities Services and Market and Wealth Services business segments are provided over time. Revenue on these services is recognized using the time elapsed method, equal to the expected invoice amount, which typically represents the value provided to the customer for our performance completed to date.

Investment management fees are dependent on the overall level and mix of AUM. The management fees, expressed in basis points, are charged for managing those assets. Management fees are typically subject to fee schedules based on the overall level of assets managed and products in which those assets are invested.

Investment management fee revenue also includes transactional- and account-based fees. These fees,

along with distribution and servicing fees, are recognized when the services have been completed. Clients are generally billed for services performed on a monthly or quarterly basis.

Performance fees are generally calculated as a percentage of the applicable portfolio's performance in excess of a benchmark index or a peer group's performance. Performance fees are recognized at the end of the measurement period when they are determinable.

See Note 24 for additional information on our principal business segments, Securities Services, Market and Wealth Services and Investment and Wealth Management, and the primary services provided.

Disaggregation of contract revenue

Contract revenue is included in fee and other revenue on the consolidated income statement. The following tables present fee and other revenue related to contracts with customers, disaggregated by type of fee revenue, for each business segment. Business segment data has been determined on an internal management basis of accounting, rather than GAAP which is used for consolidated financial reporting.

Disaggregation of contract revenue by business segment

	Year ended Dec. 31,									
	2022					2021				
(in millions)	Securities Services	Market and Wealth Services	Investment and Wealth Management	Other	Total	Securities Services	Market and Wealth Services	Investment and Wealth Management	Other	Total
Fee and other revenue – contract revenue:										
Investment services fees	**$ 4,890**	**$ 3,564**	**$ 99**	**$ (65)**	**$ 8,488**	$ 4,919	$ 3,284	$ 100	$ (70)	$ 8,233
Investment management and performance fees	**—**	**23**	**3,290**	**(14)**	**3,299**	—	18	3,553	(19)	3,552
Financing-related fees	**30**	**23**	**1**	**1**	**55**	19	48	—	1	68
Distribution and servicing fees	**4**	**(66)**	**192**	**—**	**130**	5	(5)	113	(1)	112
Investment and other revenue	**215**	**143**	**(245)**	**1**	**114**	132	4	(35)	—	101
Total fee and other revenue – contract revenue	**5,139**	**3,687**	**3,337**	**(77)**	**12,086**	5,075	3,349	3,731	(89)	12,066
Fee and other revenue – not in scope of ASC 606 *(a)(b)*	**865**	**185**	**(15)**	**(235)**	**800**	743	234	118	140	1,235
Total fee and other revenue	**$ 6,004**	**$ 3,872**	**$ 3,322**	**$ (312)**	**$ 12,886**	$ 5,818	$ 3,583	$ 3,849	$ 51	$ 13,301

(a) Primarily includes investment services fees, foreign exchange revenue, financing-related fees and investment and other revenue, all of which are accounted for using other accounting guidance.
(b) The Investment and Wealth Management business segment is net of (loss) income attributable to noncontrolling interests related to consolidated investment management funds of $(13) million in 2022 and $12 million in 2021.

Disaggregation of contract revenue by business segment

	Year ended Dec. 31, 2020				
(in millions)	Securities Services	Market and Wealth Services	Investment and Wealth Management	Other	Total
Fee and other revenue – contract revenue:					
Investment services fees	$ 4,681	$ 3,262	$ 96	$ (53)	$ 7,986
Investment management and performance fees	—	17	3,373	(17)	3,373
Financing-related fees	18	59	2	1	80
Distribution and servicing fees	4	(26)	137	—	115
Investment and other revenue	160	79	(148)	1	92
Total fee other revenue – contract revenue	4,863	3,391	3,460	(68)	11,646
Fee and other revenue – not in scope of ASC 606 *(a)(b)*	815	187	35	139	1,176
Total fee and other revenue	$ 5,678	$ 3,578	$ 3,495	$ 71	$ 12,822

(a) Primarily includes investment services fees, foreign exchange revenue, financing-related fees and investment and other revenue, all of which are accounted for using other accounting guidance.
(b) The Investment and Wealth Management business segment is net of income attributable to noncontrolling interests related to consolidated investment management funds of $9 million in 2020.

Contract balances

Our clients are billed based on fee schedules that are agreed upon in each customer contract. Receivables from customers were $2.6 billion at Dec. 31, 2022 and $2.5 billion at Dec. 31, 2021.

Contract assets represent accrued revenues that have not yet been billed to the customers due to certain contractual terms other than the passage of time and were $48 million at Dec. 31, 2022 and $42 million at Dec. 31, 2021. Accrued revenues recorded as contract assets are usually billed on an annual basis.

Both receivables from customers and contract assets are included in other assets on the consolidated balance sheet.

Contract liabilities represent payments received in advance of providing services under certain contracts and were $164 million at Dec. 31, 2022 and $163 million at Dec. 31, 2021. Contract liabilities are included in other liabilities on the consolidated balance sheet. Revenue recognized in 2022 relating to contract liabilities as of Dec. 31, 2021 was $115 million.

Changes in contract assets and liabilities primarily relate to either party's performance under the contracts.

Contract costs

Incremental costs for obtaining contracts that are deemed recoverable are capitalized as contract costs. Such costs result from the payment of sales incentives, primarily in the Wealth Management business, and totaled $58 million at Dec. 31, 2022 and $64 million at Dec. 31, 2021. Capitalized sales incentives are amortized based on the transfer of goods or services to which the assets relate. The amortization of capitalized sales incentives, which is primarily included in staff expense on the consolidated income statement, totaled $19 million in 2022, $20 million in 2021 and $21 million in 2020.

Costs to fulfill a contract are capitalized when they relate directly to an existing contract or a specific anticipated contract, generate or enhance resources that will be used to fulfill performance obligations, and are recoverable. Such costs generally represent set-up costs, which include any direct cost incurred at the inception of a contract which enables the fulfillment of the performance obligation, and totaled $77 million at Dec. 31, 2022 and $23 million at Dec. 31, 2021. These capitalized costs are amortized on a straight-line basis over the expected contract period.

Unsatisfied performance obligations

We do not have any unsatisfied performance obligations other than those that are subject to a practical expedient election under ASC 606, *Revenue From Contracts With Customers*. The practical expedient election applies to (i) contracts with an original expected length of one year or less, and (ii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

Note 11–Net interest revenue

The following table provides the components of net interest revenue presented on the consolidated income statement.

Net interest revenue	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Interest revenue			
Deposits with the Federal Reserve and other central banks	**$ 1,019**	$ (77)	$ 50
Deposits with banks	**221**	48	134
Federal funds sold and securities purchased under resale agreements	**1,200**	120	545
Loans	**1,999**	958	1,142
Securities:			
Taxable	**2,502**	1,702	2,118
Exempt from federal income taxes	**35**	42	28
Total securities	**2,537**	1,744	2,146
Trading securities	**142**	52	92
Total interest revenue	**7,118**	2,845	4,109
Interest expense			
Deposits in domestic offices	**980**	(27)	176
Deposits in foreign offices	**607**	(148)	(15)
Federal funds purchased and securities sold under repurchase agreements	**934**	(4)	283
Trading liabilities	**68**	8	15
Other borrowed funds	**9**	8	16
Commercial paper	**—**	—	7
Customer payables	**156**	(2)	28
Long-term debt	**860**	392	622
Total interest expense	**3,614**	227	1,132
Net interest revenue	**3,504**	2,618	2,977
Provision for credit losses	**39**	(231)	336
Net interest revenue after provision for credit losses	**$ 3,465**	$ 2,849	$ 2,641

Note 12–Income taxes

The components of the income tax provision are as follows:

Provision for income taxes	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Current tax expense:			
Federal	**$ 190**	$ 160	$ 465
Foreign	**404**	353	407
State and local	**19**	107	163
Total current tax expense	**613**	620	1,035
Deferred tax expense (benefit):			
Federal	**104**	208	(145)
Foreign	**(5)**	22	16
State and local	**56**	27	(64)
Total deferred tax expense (benefit)	**155**	257	(193)
Provision for income taxes	**$ 768**	$ 877	$ 842

The components of income before taxes are as follows:

Income before taxes	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Domestic	**$ 1,697**	$ 2,965	$ 2,698
Foreign	**1,631**	1,683	1,770
Income before taxes	**$ 3,328**	$ 4,648	$ 4,468

The components of our net deferred tax liability are as follows:

Net deferred tax liability	Dec. 31,	
(in millions)	**2022**	2021
Depreciation and amortization	**$ 2,063**	$ 2,149
Pension obligation	**374**	451
Other liabilities	**145**	260
Renewable energy investment	**205**	238
Securities valuation	**(31)**	81
Equity investments	**57**	58
Leasing	**(25)**	(2)
Other assets	**(31)**	(36)
Credit losses on loans	**(70)**	(61)
Reserves not deducted for tax	**(154)**	(126)
Tax credit carryforward	**(224)**	—
Employee benefits	**(253)**	(281)
U.S. foreign tax credits	**(100)**	(83)
Valuation allowance	**100**	83
Net deferred tax liability	**$ 2,056**	$ 2,731

As of Dec. 31, 2022, BNY Mellon had $100 million of U.S. foreign tax credit carryforwards which will begin to expire in 2029. We believe it is more likely than not that the benefit from these foreign tax credits will not be realized. Accordingly, we have recorded a valuation allowance of $100 million. We believe it is more likely than not that we will fully realize our remaining deferred tax assets. This conclusion is based on historical financial results and profit forecasts.

As of Dec. 31, 2022, we had approximately $1.1 billion of earnings attributable to foreign subsidiaries that have been permanently reinvested abroad and for which no local distribution tax provision has been recorded. If these earnings were to be repatriated, the estimated tax liability as of Dec. 31, 2022 would be up to $132 million.

The statutory federal income tax rate is reconciled to our effective income tax rate below:

Effective tax rate	Year ended Dec. 31,		
	2022	2021	2020
Federal rate	**21.0 %**	21.0 %	21.0 %
State and local income taxes, net of federal income tax benefit	**1.8**	2.3	1.8
Foreign operations	**2.1**	0.8	1.5
Tax credits	**(6.1)**	(4.6)	(4.1)
Tax-exempt income	**(1.0)**	(1.0)	(1.0)
Federal Deposit Insurance Corporation ("FDIC") assessment	**0.4**	0.3	0.3
Stock compensation	**(0.6)**	(0.1)	—
Goodwill impairment	**3.9**	—	—
Divestiture of stock in subsidiary	**1.0**	—	—
Other – net	**0.6**	0.2	(0.7)
Effective tax rate	**23.1 %**	18.9 %	18.8 %

Unrecognized tax positions			
(in millions)	**2022**	2021	2020
Beginning balance at Jan. 1, – gross	**$ 138**	$ 119	$ 173
Prior period tax positions:			
Increases	**—**	18	45
Decreases	**(11)**	(3)	(14)
Current period tax positions	**8**	9	15
Settlements	**(16)**	(5)	(100)
Statute expiration	**(13)**	—	—
Ending balance at Dec. 31, – gross	**$ 106**	$ 138	$ 119

Our total tax reserves as of Dec. 31, 2022 were $106 million compared with $138 million at Dec. 31, 2021. If these tax reserves were unnecessary, $106 million would affect the effective tax rate in future periods. We recognize accrued interest and penalties, if applicable, related to income taxes in income tax expense. Included in the balance sheet at Dec. 31, 2022 is accrued interest, where applicable, of $33 million. The additional tax expense related to interest for the year ended Dec. 31, 2022 was $5 million,

compared with $12 million for the year ended Dec. 31, 2021.

It is reasonably possible the total reserve for uncertain tax positions could decrease within the next 12 months by approximately $5 million as a result of adjustments related to tax years that are still subject to examination.

Our federal income tax returns are closed to examination through 2016. Our New York State and New York City income tax returns are closed to examination through 2014. Our UK income tax returns are closed to examination through 2020.

Note 13–Long-term debt

Long-term debt	**Dec. 31, 2022**			Dec. 31, 2021	
(dollars in millions)	**Rate**	**Maturity**	**Amount**	Rate	Amount
Senior debt:					
Fixed rate	**0.35 - 5.83%**	**2023 - 2033**	**$ 28,108**	0.35 - 3.95%	$ 23,053
Floating rate	**4.50 - 4.92%**	**2024 - 2038**	**1,229**	0.01 - 1.26%	1,579
Subordinated debt *(a)*	**3.00 - 3.30%**	**2028 - 2029**	**1,121**	3.00 - 3.30%	1,299
Total			**$ 30,458**		$ 25,931

(a) Fixed rate.

Total long-term debt maturing during the next five years is as follows: 2023 – $5.3 billion; 2024 – $4.9 billion; 2025 – $5.2 billion; 2026 – $4.0 billion; and 2027 – $1.6 billion.

Note 14–Variable interest entities

We have variable interests in variable interest entities ("VIEs"), which include investments in retail, institutional and alternative investment funds, including, through Nov. 1, 2022, CLO structures in which we provide asset management services, some of which are consolidated.

We earn management fees from these funds, as well as performance fees in certain funds, and may also provide start-up capital for new funds. The funds are primarily financed by our customers' investments in the funds' equity or debt.

Additionally, we invest in qualified affordable housing and renewable energy projects, which are designed to generate a return primarily through the realization of tax credits. The projects, which are structured as limited partnerships and limited liability companies, are also VIEs, but are not consolidated.

The following table presents the incremental assets and liabilities included in the consolidated balance sheet as of Dec. 31, 2022 and Dec. 31, 2021. The net assets of any consolidated VIE are solely available to settle the liabilities of the VIE and to settle any investors' ownership liquidation requests, including any seed capital we invested in the VIE.

Consolidated investment management funds	Dec. 31,	
(in millions)	**2022**	2021
Trading assets	**$ 203**	$ 443
Other assets	**6**	19
Total assets *(a)*	**$ 209**	$ 462
Other liabilities	**$ 1**	$ 3
Total liabilities *(b)*	**$ 1**	$ 3
Nonredeemable noncontrolling interests *(c)*	**$ 7**	$ 196

(a) Includes VMEs with assets of $86 million at Dec. 31, 2022 and $187 million at Dec. 31, 2021.
(b) Includes VMEs with liabilities of $1 million at Dec. 31, 2022 and $2 million at Dec. 31, 2021.
(c) Includes VMEs with nonredeemable noncontrolling interests of $7 million at Dec. 31, 2022 and $43 million at Dec. 31, 2021.

We have not provided financial or other support that was not otherwise contractually required to be provided to our VIEs. Additionally, creditors of any consolidated VIEs do not have any recourse to the general credit of BNY Mellon.

Non-consolidated VIEs

As of Dec. 31, 2022 and Dec. 31, 2021, the following assets and liabilities related to the VIEs where we are not the primary beneficiary were included in our consolidated balance sheets and primarily related to accounting for our investments in qualified affordable housing and renewable energy projects.

The maximum loss exposure indicated in the following table relates solely to our investments in, and unfunded commitments to, the VIEs.

Non-consolidated VIEs	**Dec. 31, 2022**			Dec. 31, 2021		
(in millions)	Assets	Liabilities	Maximum loss exposure	Assets	Liabilities	Maximum loss exposure
Securities – Available-for-sale *(a)*	**$ — $**	**— $**	**—**	$ 189	$ —	$ 189
Other	**2,235**	**614**	**2,850**	2,385	543	2,946

(a) Includes investments in the Company's sponsored CLOs.

Note 15–Shareholders' equity

Common stock

BNY Mellon has 3.5 billion authorized shares of common stock with a par value of $0.01 per share. At Dec. 31, 2022, 808,444,600 shares of common stock were outstanding.

In July 2022, our Board of Directors approved a 9% increase in the quarterly cash dividend on common stock, from $0.34 to $0.37 per share.

Common stock repurchase program

In June 2021, in connection with the Federal Reserve's release of the 2021 Comprehensive Capital Analysis and Review ("CCAR") stress tests, we announced a share repurchase program approved by our Board of Directors providing for the repurchase of up to $6.0 billion of common shares beginning in the third quarter of 2021 and continuing through the fourth quarter of 2022.

In 2022, we repurchased 2.0 million common shares at an average price of $61.08 per common share for a total of $124 million.

In January 2023, we announced a share repurchase program approved by our Board of Directors providing for the repurchase of up to $5.0 billion of common shares beginning Jan. 1, 2023. This new share repurchase plan replaced all previously authorized share repurchase plans.

Share repurchases may be executed through open market repurchases, in privately negotiated transactions or by other means, including through repurchase plans designed to comply with Rule 10b5-1 and other derivative, accelerated share repurchase and other structured transactions.

Preferred stock

The Parent has 100 million authorized shares of preferred stock with a par value of $0.01 per share. The following table summarizes the Parent's preferred stock issued and outstanding at Dec. 31, 2022 and Dec. 31, 2021.

Preferred stock summary *(a)*		Total shares issued and outstanding		Carrying value *(b)* *(in millions)*	
	Per annum dividend rate	**Dec. 31, 2022**	Dec. 31, 2021	**Dec. 31, 2022**	Dec. 31, 2021
Series A	Greater of (i) three-month LIBOR plus 0.565% for the related distribution period; or (ii) 4.000%	**5,001**	5,001	**$ 500**	$ 500
Series D	4.50% to but excluding June 20, 2023, then a floating rate equal to the three-month LIBOR plus 2.46%	**5,000**	5,000	**494**	494
Series F	4.625% to but excluding Sept. 20, 2026, then a floating rate equal to the three-month LIBOR plus 3.131%	**10,000**	10,000	**990**	990
Series G	4.700% to but excluding Sept. 20, 2025, then a floating rate equal to the five-year treasury rate plus 4.358%	**10,000**	10,000	**990**	990
Series H	3.700% to but excluding March 20, 2026, then a floating rate equal to the five-year treasury rate plus 3.352%	**5,825**	5,825	**577**	577
Series I	3.750% to but excluding Dec. 20, 2026, then a floating rate equal to the five-year treasury rate plus 2.630%	**13,000**	13,000	**1,287**	1,287
Total		**48,826**	48,826	**$ 4,838**	$ 4,838

(a) All outstanding preferred stock is noncumulative perpetual preferred stock with a liquidation preference of $100,000 per share.
(b) The carrying value of the Series D, Series F, Series G, Series H and Series I preferred stock is recorded net of issuance costs.

Holders of the Series A preferred stock are entitled to receive dividends, if declared by the Parent's Board of Directors, on each March 20, June 20, September 20 and December 20. Holders of the Series D preferred stock are entitled to receive dividends, if declared by the Parent's Board of Directors, on each June 20 and December 20, to but excluding June 20, 2023; and on each March 20, June 20, September 20 and December 20, from and including June 20, 2023. Holders of the Series F preferred stock are entitled to receive dividends, if declared by the Parent's Board of Directors, on each March 20 and September 20, to and including Sept. 20, 2026; and on each March 20, June 20, September 20 and December 20, from and including Dec. 20, 2026. Holders of the Series G preferred stock are entitled to receive dividends, if declared by the Parent's Board of Directors, on each March 20 and September 20. Holders of the Series H preferred stock are entitled to receive dividends, if declared by the Parent's Board of Directors, on each March 20, June 20, September 20 and December 20, commencing on March 20, 2021. Holders of the Series I preferred stock are entitled to receive dividends, if declared by the Parent's Board of Directors, on each March 20, June 20, September 20 and December 20, commencing on March 20, 2022.

BNY Mellon's ability to declare or pay dividends on, or purchase, redeem or otherwise acquire, shares of our common stock or any of our shares that rank junior to the preferred stock as to the payment of dividends and/or the distribution of any assets on any liquidation, dissolution or winding-up of the Parent will be prohibited, subject to certain restrictions, in the event that we do not declare and pay in full preferred dividends for the then current dividend period (in the case of dividends) or most recently completed dividend period (in the case of repurchases) of the Series A preferred stock or the last preceding dividend period (in the case of dividends) or most recently completed dividend period (in the case of repurchases) of the Series D, Series F, Series G, Series H and Series I preferred stock.

All of the outstanding shares of the Series A preferred stock are owned by Mellon Capital IV, a 100% owned financing subsidiary of the Parent, which will pass through any dividend on the Series A preferred stock to the holders of its Normal Preferred Capital Securities. The Parent's obligations under the trust and other agreements relating to Mellon Capital IV have the effect of providing a full and unconditional guarantee, on a subordinated basis, of payments due on the Normal Preferred Capital Securities. No other subsidiary of the Parent guarantees the securities of Mellon Capital IV. All of the outstanding shares of the Series D, Series F, Series G, Series H and Series I preferred stock are held by the depositary of the depositary shares, which will pass through the applicable portion of any dividend on the Series D,

Series F, Series G, Series H and Series I preferred stock to the holders of record of their respective depositary shares.

In December 2021, the Parent redeemed all outstanding shares of its Series E preferred stock, 100,000 liquidation preference per share. Deferred fees of approximately $10 million were realized as preferred stock dividends upon redemption.

In December 2020, the Parent redeemed all outstanding shares of its Series C preferred stock, 100,000 liquidation preference per share. Deferred fees of approximately $15 million were realized as preferred stock dividends upon redemption.

The table below presents the Parent's preferred dividends.

Preferred dividends

(dollars in millions, except per share amounts)	Depositary shares per share	**2022** Per share	**2022** Total dividend	2021 Per share	2021 Total dividend	2020 Per share	2020 Total dividend
Series A	100 *(a)*	**$ 4,088.49**	**$ 20**	$ 4,044.44	$ 20	$ 4,055.55	$ 20
Series C	4,000	**N/A**	**N/A**	N/A	N/A	5,200.00	46 *(b)*
Series D	100	**4,500.00**	**23**	4,500.00	23	4,500.00	22
Series E	100	**N/A**	**N/A**	3,630.34	47 *(c)*	4,359.63	44
Series F	100	**4,625.00**	**46**	4,625.00	46	4,625.00	46
Series G	100	**4,700.00**	**47**	4,700.00	47	1,579.72	16
Series H	100	**3,700.00**	**22**	4,183.06	24	N/A	N/A
Series I	100	**4,083.33**	**53**	N/A	N/A	N/A	N/A
Total			**$ 211**		$ 207		$ 194

(a) Represents Normal Preferred Capital Securities.
(b) Includes deferred fees of approximately $15 million related to the redemption of the Series C preferred stock.
(c) Includes deferred fees of approximately $10 million related to the redemption of the Series E preferred stock.
N/A – Not applicable.

The preferred stock is not subject to the operation of a sinking fund and is not convertible into, or exchangeable for, shares of our common stock or any other class or series of our other securities. We may redeem the Series A preferred stock, in whole or in part, at our option. We may also, at our option, redeem the shares of the Series D preferred stock on any dividend payment date, in whole or in part, on or after the dividend payment date in June 2023, the Series F preferred stock on any dividend payment date, in whole or in part, on or after the dividend payment date in September 2026, the Series G preferred stock on any dividend payment date, in whole or in part, on or after the dividend payment date in September 2025, the Series H preferred stock on any dividend payment date, in whole or in part, on or after the dividend payment date in March 2026 and the Series I preferred stock on any dividend payment date, in whole or in part, on or after the dividend payment date in December 2026. The Series D, Series F, Series G, Series H or Series I preferred stock can be redeemed, in whole but not in part, at any time within 90 days following a regulatory capital treatment event. Redemption of the preferred stock is subject to the prior approval of the Federal Reserve.

Temporary equity

Temporary equity was $109 million at Dec. 31, 2022 and $161 million at Dec. 31, 2021. Temporary equity represents the redemption value recorded for redeemable noncontrolling interests resulting from equity-classified share-based payment arrangements that are currently redeemable or are expected to become redeemable.

Capital adequacy

Regulators establish certain levels of capital for bank holding companies ("BHCs") and banks, including BNY Mellon and our bank subsidiaries, in accordance with established quantitative measurements. For the Parent to maintain its status as a financial holding company, our U.S. bank subsidiaries and BNY Mellon must, among other things, qualify as "well capitalized." As of Dec. 31,

2022 and Dec. 31, 2021, BNY Mellon and our U.S. bank subsidiaries were "well capitalized."

The regulatory capital ratios of our consolidated and largest bank subsidiary, The Bank of New York Mellon, are shown below.

Consolidated and largest bank subsidiary regulatory capital ratios *(a)*	Dec. 31,	
	2022	2021
Consolidated regulatory capital ratios:		
Common Equity Tier 1 ("CET1") ratio	**11.2 %**	11.2 %
Tier 1 capital ratio	**14.1**	14.0
Total capital ratio	**14.9**	14.9
Tier 1 leverage ratio	**5.8**	5.5
Supplementary leverage ratio ("SLR") *(b)*	**6.8**	6.6
The Bank of New York Mellon regulatory capital ratios:		
CET1 ratio	**15.6 %**	16.5 %
Tier 1 capital ratio	**15.6**	16.5
Total capital ratio	**15.7**	16.5
Tier 1 leverage ratio	**6.2**	6.0
SLR *(b)*	**7.7**	7.6

(a) For our CET1, Tier 1 capital and Total capital ratios, our effective capital ratios under U.S. capital rules are the lower of the ratios as calculated under the Standardized and Advanced Approaches. The Tier 1 leverage ratio is based on Tier 1 capital and quarterly average total assets. For BNY Mellon to qualify as "well capitalized," its Tier 1 capital and Total capital ratios must be at least 6% and 10%, respectively. For The Bank of New York Mellon, our largest bank subsidiary, to qualify as "well capitalized," its CET1, Tier 1 capital, Total capital and Tier 1 leverage ratios must be at least 6.5%, 8%, 10% and 5%, respectively.

(b) The SLR is based on Tier 1 capital and total leverage exposure, which includes certain off-balance sheet exposures. For The Bank of New York Mellon to qualify as "well capitalized," its SLR must be at least 6%.

Failure to satisfy regulatory standards, including "well capitalized" status or capital adequacy rules more generally, could result in limitations on our activities and adversely affect our financial condition. If a BHC such as BNY Mellon, or a bank such as The Bank of New York Mellon or BNY Mellon, N.A., fails to satisfy minimum capital requirements or qualify as "adequately capitalized," regulatory sanctions and limitations will be imposed.

The following table presents our capital components and risk-weighted assets determined under the Standardized and Advanced Approaches, the average assets used for leverage capital purposes and leverage exposure used for SLR purposes.

Capital components and risk-weighted assets		Dec. 31,		
(in millions)		**2022**		2021
CET1:				
Common shareholders' equity	**$**	**35,896**	$	38,196
Adjustments for:				
Goodwill and intangible assets *(a)*		**(17,210)**		(18,649)
Net pension fund assets		**(317)**		(400)
Embedded goodwill		**(279)**		(300)
Deferred tax assets		**(56)**		(55)
Other		**(2)**		(46)
Total CET1		**18,032**		18,746
Other Tier 1 capital:				
Preferred stock		**4,838**		4,838
Other		**(14)**		(99)
Total Tier 1 capital	**$**	**22,856**	$	23,485
Tier 2 capital:				
Subordinated debt	**$**	**1,248**	$	1,248
Allowance for credit losses		**291**		250
Other		**(11)**		(11)
Total Tier 2 capital – Standardized Approach		**1,528**		1,487
Excess of expected credit losses		**50**		—
Less: Allowance for credit losses		**291**		250
Total Tier 2 capital – Advanced Approaches	**$**	**1,287**	$	1,237
Total capital:				
Standardized Approach	**$**	**24,384**	$	24,972
Advanced Approaches	**$**	**24,143**	$	24,722
Risk-weighted assets:				
Standardized Approach	**$**	**159,096**	$	167,608
Advanced Approaches:				
Credit Risk	**$**	**90,243**	$	98,310
Market Risk		**2,979**		3,069
Operational Risk		**68,450**		63,688
Total Advanced Approaches	**$**	**161,672**	$	165,067
Average assets for Tier 1 leverage ratio	**$**	**396,643**	$	430,102
Total leverage exposure for SLR	**$**	**336,049**	$	354,033

(a) Reduced by deferred tax liabilities associated with intangible assets and tax deductible goodwill.

The following table presents the amount of capital by which BNY Mellon and our largest bank subsidiary, The Bank of New York Mellon, exceeded the capital thresholds determined under U.S. capital rules.

Capital above thresholds at Dec. 31, 2022

(in millions)		**Consolidated** *(a)*		**The Bank of New York Mellon**
CET1	$	4,290	$	11,175 *(a)*
Tier 1 capital		6,689		9,236 *(a)*
Total capital		4,742		6,751 *(a)*
Tier 1 leverage ratio		6,990		4,033 *(b)*
SLR		6,054		4,442 *(b)*

(a) Based on minimum required standards, with applicable buffers.
(b) Based on well capitalized standards.

Note 16–Other comprehensive income (loss)

Components of other comprehensive income (loss)	Year ended Dec. 31,								
	2022			2021			2020		
(in millions)	Pre-tax amount	Tax (expense) benefit	After-tax amount	Pre-tax amount	Tax (expense) benefit	After-tax amount	Pre-tax amount	Tax (expense) benefit	After-tax amount
Foreign currency translation:									
Foreign currency translation adjustments arising during the period *(a)*	**$ (455)**	**$ (148)**	**$ (603)**	$ (313)	$ (63)	$ (376)	$ 441	$ 67	$ 508
Total foreign currency translation	**(455)**	**(148)**	**(603)**	(313)	(63)	(376)	441	67	508
Unrealized (loss) gain on assets available-for-sale:									
Unrealized (loss) gain arising during the period	**(4,292)**	**1,047**	**(3,245)**	(1,515)	368	(1,147)	1,573	(371)	1,202
Reclassification adjustment *(b)*	**443**	**(105)**	**338**	(5)	1	(4)	(33)	8	(25)
Net unrealized (loss) gain on assets available-for-sale	**(3,849)**	**942**	**(2,907)**	(1,520)	369	(1,151)	1,540	(363)	1,177
Defined benefit plans:									
Net (loss) gain arising during the period	**(400)**	**94**	**(306)**	296	(77)	219	(138)	31	(107)
Amortization of prior service credit, net loss and initial obligation included in net periodic benefit cost *(b)*	**68**	**(12)**	**56**	113	(25)	88	95	(18)	77
Total defined benefit plans	**(332)**	**82**	**(250)**	409	(102)	307	(43)	13	(30)
Unrealized (loss) gain on cash flow hedges:									
Unrealized hedge (loss) gain arising during the period	**(16)**	**4**	**(12)**	3	—	3	5	(1)	4
Reclassification of net (gain) loss to net income:									
Foreign exchange ("FX") contracts – staff expense	**9**	**(2)**	**7**	(12)	3	(9)	1	—	1
FX contracts – investment and other revenue	**(1)**	**—**	**(1)**	—	—	—	—	—	—
Total reclassifications to net income	**8**	**(2)**	**6**	(12)	3	(9)	1	—	1
Net unrealized (loss) gain on cash flow hedges	**(8)**	**2**	**(6)**	(9)	3	(6)	6	(1)	5
Total other comprehensive (loss) income	**$ (4,644)**	**$ 878**	**$ (3,766)**	$ (1,433)	$ 207	$ (1,226)	$ 1,944	$ (284)	$ 1,660

(a) Includes the impact of hedges of net investments in foreign subsidiaries. See Note 23 for additional information.

(b) The reclassification adjustment related to the unrealized gain (loss) on assets available-for-sale is recorded as net securities gains (losses) in investment and other revenue on the consolidated income statement. The amortization of prior service credit, net loss and initial obligation included in net periodic benefit cost is recorded as other expense on the consolidated income statement.

Changes in accumulated other comprehensive income (loss) attributable to The Bank of New York Mellon Corporation shareholders

(in millions)	Foreign currency translation	Pensions	Other post-retirement benefits	Unrealized gain (loss) on assets available-for-sale	Unrealized gain (loss) on cash flow hedges	Total accumulated other comprehensive income (loss), net of tax
2019 ending balance	$ (1,652)	$ (1,275)	$ (49)	$ 336	$ 2	$ (2,638)
Impact of adopting ASU 2016-03, *Financial Instruments – Credit Losses*	—	—	—	(5)	—	(5)
Adjusted balance at Jan. 1, 2020	(1,652)	(1,275)	(49)	331	2	(2,643)
Change in 2020	506	(24)	(6)	1,177	5	1,658
2020 ending balance	(1,146)	(1,299)	(55)	1,508	7	(985)
Change in 2021	(378)	283	24	(1,151)	(6)	(1,228)
2021 ending balance	(1,524)	(1,016)	(31)	357	1	(2,213)
Change in 2022	**(590)**	**(240)**	**(10)**	**(2,907)**	**(6)**	**(3,753)**
2022 ending balance	**$ (2,114)**	**$ (1,256)**	**$ (41)**	**$ (2,550)**	**$ (5)**	**$ (5,966)**

Note 17–Stock-based compensation

Our Long-Term Incentive Plans provide for the issuance of restricted stock, restricted stock units ("RSUs") and other stock-based awards, including options, to employees and directors of BNY Mellon. At Dec. 31, 2022, under the Long-Term Incentive Plan approved in April 2019, we may issue 17,569,917 new stock-based awards, all of which may be issued as restricted stock or RSUs. Stock-based compensation expense related to retirement eligibility vesting totaled $72 million in 2022, $64 million in 2021 and $43 million in 2020.

Restricted stock, RSUs and Performance share units

Restricted stock and RSUs are granted under our long-term incentive plans at no cost to the recipient. These awards are subject to forfeiture until certain restrictions have lapsed, including continued employment, for a specified period. The recipient of a share of restricted stock is entitled to voting rights and generally is entitled to dividends on the common stock. An RSU entitles the recipient to receive a share of common stock after the applicable restrictions lapse. The recipient generally is entitled to receive cash payments equivalent to any dividends paid on the underlying common stock during the period the RSU is outstanding but does not receive voting rights.

The fair value of restricted stock and RSUs is equal to the fair market value of our common stock on the date of grant. The expense is recognized over the vesting period, which is generally zero to four years. The total compensation expense recognized for restricted stock and RSUs was $293 million in 2022, $260 million in 2021 and $188 million in 2020. The total income tax benefit recognized in the consolidated income statement related to compensation costs was $69 million in 2022, $62 million in 2021 and $45 million in 2020.

BNY Mellon's Executive Committee members were granted a target award of 513,101 performance share units ("PSUs") in 2022, 648,973 in 2021 and 402,486 in 2020. The 2022 and 2021 Executive Committee PSUs will vest based on two separate and distinct measurements, a performance condition and a market condition split 70% based on return on tangible common shareholders' equity ("ROTCE") and 30% on Total Shareholder Return ("TSR"). The TSR portion was valued using a Monte Carlo simulation method, while the ROTCE portion was measured based on the fair market value on the date of grant. Each condition only impacts its applicable portion (70%/30%) of the total PSU award. The performance and market conditions are measured after three years to determine the final percentage of the total PSUs to vest. The final total amount of vested PSUs will be the sum of the two separate and distinct performance and market-based portions of the PSU awards, but will be capped at 150% of the total PSUs awarded. The ultimate payout is subject to the discretion of the Human Resources and Compensation Committee. These awards are classified as equity and the ROTCE portion is marked-to-market to earnings as a result of this discretion.

The 2020 PSU awards cliff vest in three years with the number of shares that vest determined based on a payout table that references performance conditions related to average revenue growth and average operating margin, both as adjusted and subject to Human Resources and Compensation Committee discretion. These awards are classified as equity and marked-to-market to earnings as a result of this discretion.

The following table summarizes our non-vested PSU, restricted stock and RSU activity for 2022.

Non-vested PSU, restricted stock and RSU activity	Number of shares *(a)*	Weighted-average fair value at grant date
Non-vested PSUs, restricted stock and RSUs at Dec. 31, 2021	14,681,987	$ 45.55
Granted	**6,781,743**	**58.75**
Vested	**(5,481,015)**	**47.73**
Forfeited	**(896,580)**	**50.76**
Non-vested PSUs, restricted stock and RSUs at Dec. 31, 2022	**15,086,135**	**$ 50.38**

(a) Includes dividend shares earned on the Executive Committee PSUs and Board of Director's stock awards.

As of Dec. 31, 2022, $326 million of total unrecognized compensation costs related to non-vested PSUs, restricted stock and RSUs is expected to be recognized over a weighted-average period of 2.4 years.

The total fair value of restricted stock, RSUs and PSUs that vested was $264 million in 2022, $240 million in 2021 and $263 million in 2020. The actual excess tax benefit (expense) realized for the tax deductions from shares vested totaled $16 million in 2022, $(8) million in 2021 and $(4) million in 2020.

The tax impacts were recognized in the provision for income taxes.

Subsidiary Long-Term Incentive Plans

BNY Mellon also has several subsidiary Long-Term Incentive Plans which have issued restricted subsidiary shares to certain employees. These share awards are subject to forfeiture until certain restrictions have lapsed, including continued employment for a specified period of time. The shares are generally non-voting and non-dividend paying. Once the restrictions lapse, which generally occurs in three to five years, the shares can only be sold, at the option of the employee, to BNY Mellon at a price based generally on the fair value of the subsidiary at the time of repurchase. In certain instances BNY Mellon has an election to call the shares.

Stock options

Our Long-Term Incentive Plans provide for the issuance of stock options at fair market value at the date of grant to officers and employees of BNY Mellon. No stock options were granted in 2022, 2021 and 2020. No stock options were outstanding at Dec. 31, 2022.

A summary of the status of our options as of Dec. 31, 2022, and changes during the year, is presented below:

Stock option activity	Shares subject to option	Weighted-average exercise price	Weighted-average remaining contractual term *(in years)*
Balance at Dec. 31, 2021	407,905	$ 22.03	0.1
Granted	—	—	
Exercised	(397,291)	22.03	
Canceled/Expired	(10,614)	22.03	
Balance at Dec. 31, 2022 ***(a)***	**—**	**$ —**	**0.0**

(a) At Dec. 31, 2021 and Dec. 31, 2020, 407,905 and 2,335,238 options were exercisable at a weighted-average price per common share of $22.03 and $23.99, respectively.

Aggregate intrinsic value of options	Dec. 31,		
(in millions)	**2022**	2021	2020
Outstanding	**$ —**	$ 15	$ 43
Exercisable	**$ —**	$ 15	$ 43

The total intrinsic value of options exercised was $15 million in 2022, $48 million in 2021 and $21 million in 2020.

Cash received from option exercises totaled $9 million in 2022, $50 million in 2021 and $46 million in 2020. The actual excess tax benefit realized for the tax deductions from options exercised totaled $3 million in 2022, $8 million in 2021 and $2 million in 2020. The tax benefits were recognized in the provision for income taxes.

Note 18–Employee benefit plans

BNY Mellon has defined benefit and/or defined contribution retirement plans and other post-retirement plans providing healthcare benefits.

The defined benefit pension plans cover approximately 8,100 U.S. employees and approximately 15,700 non-U.S. employees.

BNY Mellon has one qualified and several non-qualified defined benefit pension plans in the U.S. and several pension plans overseas.

Effective June 30, 2015, the benefit accruals under the U.S. qualified and non-qualified defined benefit plans were frozen. This change resulted in no additional benefits being earned by participants in those plans based on service or pay after June 30, 2015. These plans were previously closed to new participants effective Dec. 31, 2010.

Effective Dec. 31, 2018, the benefit accruals were frozen under our largest foreign plan, which covers certain UK employees. This change resulted in no additional benefits being earned by participants in that plan based on service or pay after Dec. 31, 2018. Most UK employees currently earn benefits only on a defined contribution basis. UK employees impacted by the pension plan freeze began earning benefits on a defined contribution basis on Jan. 1, 2019.

Pension and post-retirement healthcare plans

The following tables report the combined data for our domestic and foreign defined benefit pension and post-retirement healthcare plans.

	Pension Benefits				Healthcare Benefits			
	Domestic		Foreign		Domestic		Foreign	
(dollars in millions)	**2022**	2021	**2022**	2021	**2022**	2021	**2022**	2021
Weighted-average assumptions used to determine benefit obligations								
Discount rate	**5.61 %**	3.03 %	**4.62 %**	2.11 %	**5.61 %**	3.03 %	**4.75 %**	2.15 %
Rate of compensation increase	**N/A**	N/A	**3.72**	3.43	**3.00**	3.00	**N/A**	N/A
Cash balance interest crediting rate	**4.00**	4.00	**N/A**	N/A	**N/A**	N/A	**N/A**	N/A
Change in benefit obligation *(a)*								
Benefit obligation at beginning of period	**$ (4,747)**	$ (5,030)	**$ (1,456)**	$ (1,614)	**$ (134)**	$ (156)	**$ (3)**	$ (4)
Service cost	**—**	—	**(11)**	(14)	**(1)**	(1)	**—**	—
Interest cost	**(140)**	(137)	**(28)**	(25)	**(4)**	(4)	**—**	—
Actuarial gain	**1,105**	164	**554**	112	**35**	17	**1**	—
Benefits paid	**255**	256	**30**	50	**9**	10	**—**	—
Foreign exchange adjustment	**N/A**	N/A	**143**	35	**N/A**	N/A	**—**	1
Benefit obligation at end of period	**(3,527)**	(4,747)	**(768)**	(1,456)	**(95)**	(134)	**(2)**	(3)
Change in fair value of plan assets								
Fair value at beginning of period	**6,129**	6,132	**1,807**	1,786	**144**	127	**—**	—
Actual return on plan assets	**(1,082)**	238	**(631)**	89	**(28)**	17	**—**	—
Employer contributions	**14**	15	**10**	12	**9**	10	**—**	—
Benefit payments	**(255)**	(256)	**(30)**	(50)	**(9)**	(10)	**—**	—
Foreign exchange adjustment	**N/A**	N/A	**(181)**	(30)	**N/A**	N/A	**—**	—
Fair value at end of period	**4,806**	6,129	**975**	1,807	**116**	144	**—**	—
Funded status at end of period	**$ 1,279**	$ 1,382	**$ 207**	$ 351	**$ 21**	$ 10	**$ (2)**	$ (3)
Amounts recognized in accumulated other comprehensive loss (income) consist of:								
Net loss	**$ 1,645**	$ 1,425	**$ 109**	$ 3	**$ 41**	$ 44	**$ (2)**	$ (1)
Prior service cost (credit)	**—**	—	**4**	1	**(13)**	(20)	**—**	—
Total loss (before tax effects)	**$ 1,645**	$ 1,425	**$ 113**	$ 4	**$ 28**	$ 24	**$ (2)**	$ (1)

(a) The benefit obligation for pension benefits is the projected benefit obligation, and for healthcare benefits, it is the accumulated benefit obligation.
N/A – Not applicable.

A number of key assumptions and measurement date values determine pension expense. The key elements include the long-term rate of return on plan assets, the discount rate, the market-related value of plan assets and the price used to value stock in the Employee Stock Ownership Plan ("ESOP").

The discount rate for U.S. pension plans was determined after reviewing equivalent rates obtained by discounting the pension plans' expected cash flows using various high-quality, long-term corporate bond yield curves. We also reviewed the results of several models that matched bonds to our pension cash flows. After reviewing the various indices and models, we selected a discount rate of 5.61% as of Dec. 31, 2022.

The discount rates for foreign pension plans are based on high-quality corporate bond rates in countries that have an active corporate bond market. In those countries with no active corporate bond market, discount rates are based on local government bond rates plus a credit spread.

Actuarial gains on the benefit obligation for the domestic and foreign pension plans in 2022 and 2021 are primarily attributable to increases in discount rates.

Net periodic benefit (credit) cost	Pension Benefits						Healthcare Benefits					
	Domestic			Foreign			Domestic			Foreign		
(dollars in millions)	**2022**	2021	2020	**2022**	2021	2020	**2022**	2021	2020	**2022**	2021	2020
Weighted-average assumptions as of Jan. 1:												
Market-related value of plan assets	**$ 5,924**	$ 5,710	$ 5,437	**$ 1,627**	$ 1,586	$ 1,415	**$ 133**	$ 123	$ 116	**N/A**	N/A	N/A
Discount rate	**3.03 %**	2.80 %	3.45 %	**2.11 %**	1.59 %	2.02 %	**3.03 %**	2.80 %	3.45 %	**2.15 %**	1.65 %	2.10 %
Expected rate of return on plan assets	**5.375**	5.375	6.00	**2.40**	2.17	2.85	**5.375**	5.375	6.00	**N/A**	N/A	N/A
Rate of compensation increase	**N/A**	N/A	N/A	**3.43**	3.12	3.19	**3.00**	3.00	3.00	**N/A**	N/A	N/A
Cash balance interest crediting rate	**4.00**	4.00	4.00	**N/A**	N/A	N/A	**N/A**	N/A	N/A	**N/A**	N/A	N/A
Components of net periodic benefit (credit) cost:												
Service cost	**$ —**	$ —	$ —	**$ 11**	$ 14	$ 12	**$ 1**	$ 1	$ 1	**$ —**	$ —	$ —
Interest cost	**140**	137	156	**28**	25	27	**4**	4	5	**—**	—	—
Expected return on assets	**(312)**	(300)	(319)	**(35)**	(34)	(39)	**(7)**	(7)	(7)	**—**	—	—
Amortization of:												
Prior service cost (credit)	**—**	—	—	**—**	1	—	**(7)**	(6)	(7)	**—**	—	—
Net actuarial loss	**69**	98	87	**3**	13	11	**3**	6	4	**—**	—	—
Settlement loss	**—**	—	—	**—**	1	—	**—**	—	—	**—**	—	—
Net periodic benefit (credit) cost	**$ (103)**	$ (65)	$ (76)	**$ 7**	$ 20	$ 11	**$ (6)**	$ (2)	$ (4)	**$ —**	$ —	$ —

N/A – Not applicable.

Changes in other comprehensive (income) loss in 2022	Pension Benefits		Healthcare Benefits	
(in millions)	Domestic	Foreign	Domestic	Foreign
Net loss (gain) arising during period	$ 289	$ 112	$ —	$ (1)
Recognition of prior years' net (loss)	(69)	(3)	(3)	—
Recognition of prior years' service credit	—	—	7	—
Total recognized in other comprehensive loss (income) (before tax effects)	$ 220	$ 109	$ 4	$ (1)

	Domestic		Foreign	
(in millions)	**2022**	2021	**2022**	2021
Pension benefits:				
Prepaid benefit cost	**$ 1,399**	$ 1,535	**$ 252**	$ 411
Accrued benefit cost	**(120)**	(153)	**(45)**	(60)
Total pension benefits	**$ 1,279**	$ 1,382	**$ 207**	$ 351
Healthcare benefits:				
Accrued benefit cost	**$ 21**	$ 10	**$ (2)**	$ (3)
Total healthcare benefits	**$ 21**	$ 10	**$ (2)**	$ (3)

The accumulated benefit obligation for all defined benefit plans was $4.3 billion at Dec. 31, 2022 and $6.2 billion at Dec. 31, 2021.

Plans with obligations in excess of plan assets	Pension Benefits				Healthcare Benefits			
	Domestic		Foreign		Domestic		Foreign	
(in millions)	**2022**	2021	**2022**	2021	**2022**	2021	**2022**	2021
Projected benefit obligation	**$ 120**	$ 153	**$ 64**	$ 100	**N/A**	N/A	**N/A**	N/A
Fair value of plan assets	**—**	—	**19**	39	**N/A**	N/A	**N/A**	N/A
Accumulated benefit obligation	**120**	153	**50**	82	**$ 62**	$ 87	**$ 2**	$ 3
Fair value of plan assets	**—**	—	**18**	39	**—**	—	**—**	—

N/A – Not applicable.

Assumed healthcare cost trend

The assumed healthcare cost trend rate used in determining domestic benefit expense for 2023 is 6.85%, decreasing to 3.94% in 2076 for pre-Medicare costs and 6.50% decreasing to 3.94% in 2076 for Medicare costs. The initial trend rate assumption represents an estimate of short term cost increases based on recent health care marketplace experience, and taking into consideration the cost characteristics of plans available to retirees. Annual increases in national health expenditures have exceeded the general growth in GDP for many years. However, there are practical limitations to how long these trends can continue. It is unrealistic to assume that health care expenditures will be allowed to consume the majority of the economy. Therefore, over the long term we expect that health care costs will be constrained by the public's ability and willingness to pay the higher cost of health care coverage. This assumption implies that the ultimate trend rate should be related to the expected long-term growth in the economy. Therefore, we assume the ultimate rate to be comprised of real growth in per capita GDP, long-term growth attributable to technology innovations, and the assumed long-term inflation rate. The initial trend is assumed to decrease to this ultimate rate over time. These long-range trend impacts were developed using the Getzen Model of Long-Run Medical Cost Trends.

The following benefit payments for the pension and healthcare plans, which reflect expected future service as appropriate, are expected to be paid over the next 10 years:

Expected benefit payments *(in millions)*		**Domestic**	**Foreign**
Pension benefits:			
Year	2023	$ 267	$ 42
	2024	269	42
	2025	267	44
	2026	267	45
	2027	265	48
	2028-2032	1,290	276
Total pension benefits		$ 2,625	$ 497
Healthcare benefits:			
Year	2023	$ 9	$ —
	2024	9	—
	2025	9	—
	2026	8	—
	2027	8	—
	2028-2032	35	1
Total healthcare benefits		$ 78	$ 1

Plan contributions

We expect to make cash contributions to fund our defined benefit pension plans in 2023 of $19 million for the domestic plans and $7 million for the foreign plans.

We expect to make cash contributions to fund our post-retirement healthcare plans in 2023 of $9 million for the domestic plans and less than $1 million for the foreign plans.

Investment strategy and asset allocation

We are responsible for the administration of various employee pension and healthcare post-retirement benefits plans, both domestically and internationally. The domestic plans are administered by BNY Mellon's Benefits Administration Committee, a named fiduciary. Subject to the following, at all relevant times, BNY Mellon's Benefits Investment Committee, another named fiduciary to the domestic plans, is responsible for the investment of plan assets. The Benefits Investment Committee's responsibilities include the investment of all domestic defined benefit plan assets, as well as the determination of investment options offered to participants in all domestic defined contribution plans. The Benefits Investment Committee conducts periodic reviews of investment performance, asset allocation and investment manager suitability. In addition, the Benefits Investment Committee has oversight of the Regional Governance Committees for the foreign defined benefit plans.

Our investment objective for U.S. and foreign plans is to maximize total return while maintaining a broadly diversified portfolio for the primary purpose of satisfying obligations for future benefit payments. Our plans are primarily invested in fixed income and equity securities. In general, for the domestic plan's portfolio, fixed income securities can range from 35% to 100% of plan assets, equity securities and alternative investments can range from 0% to 65% of plan assets and cash equivalents can be held in amounts ranging from 0% to 10% of plan assets. Actual asset allocation within the approved ranges varies from time to time based on economic conditions (both current and forecast), the timing of transitional reallocations and the advice of professional advisors.

Our pension assets were invested as follows:

Asset allocations	Domestic		Foreign	
	2022	2021	**2022**	2021
Fixed income	**60 %**	60 %	**74 %**	82 %
Equities	**36**	37	**12**	8
Alternative investments	**3**	2	**12**	9
Cash	**1**	1	**2**	1
Total pension assets	**100 %**	100 %	**100 %**	100 %

We held no The Bank of New York Mellon Corporation stock in our pension plans at Dec. 31, 2022 and Dec. 31, 2021. Assets of the U.S. postretirement healthcare plan are invested in an insurance contract.

Fair value measurement of plan assets

In accordance with ASC 715, *Compensation – Retirement Benefits*, we have established a three-level hierarchy for fair value measurements of its pension plan assets based upon the transparency of inputs to the valuation of an asset as of the measurement date. The valuation hierarchy is consistent with guidance in ASC 820, *Fair Value Measurement*, which is detailed in Note 20.

The following is a description of the valuation methodologies used for assets measured at fair value, as well as the general classification of such assets pursuant to the valuation hierarchy.

Cash and currency

This category consists primarily of foreign currency balances and is included in Level 1 of the valuation hierarchy. Foreign currency is translated monthly based on current foreign exchange rates.

Common and preferred stock and exchange-traded funds

These investments include equities and are valued at the closing price reported in the active market in which the individual securities are traded, if available. Common and preferred stock and exchange-traded funds are included in Level 1 of the valuation hierarchy.

Collective trust funds

Collective trust funds include commingled and U.S. equity funds that have no readily available market quotations. The fair value of the funds is based on the securities in the portfolio, which typically are the amount that the fund might reasonably expect to receive for the securities upon a sale. These funds are valued using observable inputs on either a daily or monthly basis. Collective trust funds are included in Level 2 of the valuation hierarchy.

Fixed-income investments

Fixed-income investments include U.S. Treasury securities, U.S. government agencies, sovereign government obligations, state and political subdivisions, U.S. corporate bonds, supranational and foreign corporate debt funds. U.S. Treasury and certain sovereign debt securities that are actively traded in highly liquid over-the-counter (“OTC”) markets are valued at the closing price reported in the active market in which the individual security is traded and included as Level 1 of the valuation hierarchy. U.S. government agencies, sovereign government obligations, state and political subdivisions, U.S. corporate bonds, supranational and foreign corporate debt funds are valued based on quoted prices for comparable securities with similar yields and credit ratings. When quoted prices are not available for identical or similar bonds, the bonds are valued using discounted cash flows that maximize observable inputs, such as current yields of similar instruments, but includes adjustments for certain risks that may not be observable, such as credit and liquidity risks. U.S. government agencies, sovereign government obligations, state and political subdivisions, U.S. corporate bonds, supranational and foreign corporate debt funds are primarily included in Level 2 of the valuation hierarchy.

Other assets measured at NAV per share, as a practical expedient

Other assets measured at NAV, as a practical expedient, include funds of funds, venture capital and partnership interests and other funds. There are no readily available market quotations for these funds. The fair value of the funds of funds is based on NAVs of the funds in the portfolio, which reflects the value of the underlying investments held by the fund, less its liabilities. The fair value of the underlying investments is typically the amount that the fund might reasonably expect to receive upon selling those hard to value or illiquid investments within the portfolios. These funds are either valued on a daily or monthly basis. The fair value of the venture capital

and partnership interests is based on the pension plan's ownership percentage of the fair value of the underlying funds as provided by the fund managers. These funds are typically valued on a quarterly basis.

The following tables present the fair value of each major category of plan assets as of Dec. 31, 2022 and Dec. 31, 2021, by captions and by ASC 820, *Fair Value Measurement*, valuation hierarchy.

Plan assets measured at fair value on a recurring basis—domestic plans at Dec. 31, 2022

(in millions)	Level 1	Level 2	Level 3	Total fair value
Common and preferred stock:				
U.S. equity	$ 897	$ —	$ —	897
Non-U.S. equity	351	—	—	351
Collective trust funds:				
U.S. equity	—	169	—	169
Commingled	—	493	—	493
Fixed income:				
U.S. corporate bonds	—	2,333	—	2,333
U.S. Treasury securities	214	—	—	214
State and political subdivisions	—	88	—	88
Sovereign government obligations	6	26	—	32
U.S. government agencies	—	21	—	21
Supranational	—	12	—	12
Other	—	28	—	28
Exchange-traded funds	8	—	—	8
Total domestic plan assets in the fair value hierarchy	$ 1,476	$ 3,170	$ —	4,646
Other assets measured at NAV:				
Funds of funds				154
Venture capital and partnership interests				6
Total domestic plan assets, at fair value			$	4,806

Plan assets measured at fair value on a recurring basis—foreign plans at Dec. 31, 2022

(in millions)	Level 1	Level 2	Level 3	Total fair value
Corporate debt funds	$ —	$ 611	$ —	611
Equity funds	—	117	—	117
Sovereign/government obligation funds	—	111	—	111
Cash and currency	16	—	—	16
Total foreign plan assets in the fair value hierarchy	$ 16	$ 839	$ —	855
Other assets measured at NAV				120
Total foreign plan assets, at fair value			$	975

Plan assets measured at fair value on a recurring basis—domestic plans at Dec. 31, 2021

(in millions)	Level 1	Level 2	Level 3	Total fair value
Common and preferred stock:				
U.S. equity	$ 1,115	$ —	$ —	$ 1,115
Non-U.S. equity	213	—	—	213
Collective trust funds:				
U.S. equity	—	615	—	615
Commingled	—	588	—	588
Fixed income:				
U.S. corporate bonds	—	2,863	—	2,863
U.S. Treasury securities	342	—	—	342
State and political subdivisions	—	115	—	115
Sovereign government obligations	6	46	—	52
U.S. government agencies	—	39	—	39
Supranational	—	12	—	12
Other	—	18	—	18
Total domestic plan assets in the fair value hierarchy	$ 1,676	$ 4,296	$ —	$ 5,972
Other assets measured at NAV:				
Funds of funds				150
Venture capital and partnership interests				7
Total domestic plan assets, at fair value			$	6,129

Plan assets measured at fair value on a recurring basis—foreign plans at Dec. 31, 2021

(in millions)	Level 1	Level 2	Level 3	Total fair value
Corporate debt funds	$ —	$ 1,325	$ —	$ 1,325
Sovereign/government obligation funds	—	147	—	147
Equity funds	—	154	—	154
Cash and currency	18	—	—	18
Total foreign plan assets in the fair value hierarchy	$ 18	$ 1,626	$ —	$ 1,644
Other assets measured at NAV				163
Total foreign plan assets, at fair value			$	1,807

Other assets measured at NAV per share, as a practical expedient

Certain pension and post-retirement plan assets are invested in funds of funds, venture capital and partnership interests and other contracts valued using NAV, as a practical expedient. The funds of funds investments are redeemable at NAV under agreements with the funds of funds managers.

Assets valued using NAV at Dec. 31, 2022				
(dollars in millions)	Fair value	Unfunded commitments	Redemption frequency	Redemption notice period
Funds of funds *(a)*	$ 154	$ —	Monthly	30-45 days
Venture capital and partnership interests *(b)*	91	—	N/A	N/A
Other contracts *(c)*	35	—	N/A	N/A
Total	**$ 280**	**$ —**		

Assets valued using NAV at Dec. 31, 2021				
(dollars in millions)	Fair value	Unfunded commitments	Redemption frequency	Redemption notice period
Funds of funds *(a)*	$ 150	$ —	Monthly	30-45 days
Venture capital and partnership interests *(b)*	128	—	N/A	N/A
Other contracts *(c)*	42	—	N/A	N/A
Total	$ 320	$ —		

(a) Funds of funds includes multi-strategy hedge funds that utilize investment strategies that invest over both long-term investment and short-term investment horizons.

(b) Venture capital and partnership interests do not have redemption rights. Distributions from such funds will be received as the underlying investments are liquidated.

(c) Other contracts include assets invested in pooled accounts at insurance companies that are privately valued by the asset manager.

N/A – Not applicable.

Defined contribution plans

We sponsor defined contribution plans in the U.S. and in certain non-U.S. locations, all of which are administered in accordance with local laws. The most significant defined contribution plan is The Bank of New York Mellon Corporation 401(k) Savings Plan sponsored by the Company in the U.S. and covers substantially all U.S. employees.

Under The Bank of New York Mellon Corporation 401(k) Savings Plan for 2022 and 2021, the Company matched 100% of participant contributions up to 7% of an employee's eligible base pay with a monetary limit of $16,000 per participant. In addition, an annual non-elective contribution of $750 was made in 2022 and 2021 to each participant with eligible base pay of less than $100,000 a year and who are credited with at least one year of service. In 2020, the Company matched 100% of the first 4% of an employee's eligible base pay plus 50% of the next 2% of eligible base pay contributed by the participant for a maximum matching contribution of 5%, subject to statutory limits. In addition, annual non-elective contributions equal to 2% of eligible base pay was made to participants in 2020.

At Dec. 31, 2022 and Dec. 31, 2021, The Bank of New York Mellon Corporation 401(k) Savings Plan owned 9.2 million and 9.5 million shares of our common stock, respectively. The fair value of total assets was $7.8 billion at Dec. 31, 2022 and $9.4 billion at Dec. 31, 2021. We recorded expenses of $276 million in 2022, $258 million in 2021 and $249 million in 2020, primarily for contributions to our defined contribution plans.

We also have an ESOP covering certain domestic full-time employees hired on or before July 1, 2008. The ESOP works in conjunction with the defined benefit pension plan. Employees are entitled to the higher of their benefit under the ESOP or such defined benefit pension plan at retirement. Benefits payable under the defined benefit pension plan are offset by the equivalent value of benefits earned under the ESOP.

At Dec. 31, 2022 and Dec. 31, 2021, the ESOP owned 3.7 million and 4.0 million shares of our common stock, respectively. The fair value of total ESOP assets was $171 million at Dec. 31, 2022 and $236 million at Dec. 31, 2021. The Company is not permitted to make contributions to the ESOP.

The Benefits Investment Committee appointed Fiduciary Counselors Inc. to serve as the independent fiduciary to (i) make all fiduciary decisions related to the continued prudence of offering the common stock of BNY Mellon or its affiliates as an investment option under the plans, other than plan sponsor decisions, and (ii) select and monitor any actively or passively managed investments that are managed by BNY Mellon or its affiliates to be offered to participants as investment options under the plans, excluding self-directed accounts.

Note 19–Company financial information (Parent Corporation)

In connection with our single point of entry resolution strategy, we have established an intermediate holding company ("IHC") to facilitate the provision of capital and liquidity resources to certain key subsidiaries in the event of material financial distress or failure. In 2017, we entered into a binding support agreement with those key subsidiaries and other related entities that requires the IHC to provide that support. The support agreement requires the Parent to transfer cash and other liquid financial assets to the IHC on an ongoing basis, subject to certain amounts retained by

the Parent to meet its near-term cash needs. The Parent's and the IHC's obligations under the support agreement are secured. The IHC has provided unsecured subordinated funding notes to the Parent as well as a committed line of credit that allows the Parent to draw funds necessary to service near-term obligations. As a result, during business-as-usual circumstances, the Parent is expected to continue to have access to the funds necessary to pay dividends, repurchase common stock, service its debt and satisfy its other obligations. If our projected financial resources deteriorate so severely that resolution of the Parent becomes imminent, the committed line of credit the IHC provided to the Parent will automatically terminate, with all amounts outstanding becoming due and payable, and the support agreement will require the Parent to transfer most of its remaining assets (other than stock in subsidiaries and a cash reserve to fund bankruptcy expenses) to the IHC. As a result, during a period of severe financial stress, the Parent could become unable to meet its debt and payment obligations (including with respect to its securities), causing the Parent to seek protection under bankruptcy laws earlier than it otherwise would have.

Our bank subsidiaries are subject to dividend limitations under the federal and state banking laws. Under these statutes, prior regulatory consent is required for dividends in any year that would exceed the bank's net profits for such year combined with retained net profits for the prior two years. Additionally, such bank subsidiaries may not declare dividends in excess of net profits on hand, as defined, after deducting the amount by which the principal amount of all loans, on which interest is past due for a period of six months or more, exceeds the allowance for credit losses.

The payment of dividends also is limited by minimum capital requirements and buffers imposed on banks. As of Dec. 31, 2022, our bank subsidiaries exceeded these requirements.

Subsequent to Dec. 31, 2022, our U.S. bank subsidiaries could declare dividends to the Parent of approximately $3.4 billion, without the need for a regulatory waiver. In addition, at Dec. 31, 2022, non-bank subsidiaries of the Parent had liquid assets of approximately $4.4 billion.

The bank subsidiaries declared dividends of $1.0 billion in 2022, $2.5 billion in 2021 and $1.5 billion in 2020. The Federal Reserve and the Office of the Comptroller of the Currency have issued additional guidelines that require BHCs and national banks to continually evaluate the level of cash dividends in relation to their respective operating income, capital needs, asset quality and overall financial condition.

The Federal Reserve policy with respect to the payment of cash dividends by BHCs provides that, as a matter of prudent banking, a BHC should not maintain a rate of cash dividends unless its net income available to common shareholders has been sufficient to fully fund the dividends, and the prospective rate of earnings retention appears to be consistent with the holding company's capital needs, asset quality and overall financial condition. The Federal Reserve can also prohibit a dividend if payment would constitute an unsafe or unsound banking practice.

In June 2021, in connection with the Federal Reserve's release of the 2021 CCAR stress tests, we announced a share repurchase program approved by our Board of Directors providing for the repurchase of up to $6.0 billion of common stock beginning in the third quarter of 2021 and continuing through the fourth quarter of 2022.

In January 2023, we announced a share repurchase program approved by our Board of Directors providing for the repurchase of up to $5.0 billion of common shares beginning Jan. 1, 2023. This new share repurchase plan replaced all previously authorized share repurchase plans.

The Federal Reserve Act limits, and requires collateral for, extensions of credit by our insured subsidiary banks to the Parent and certain of its non-bank affiliates. Also, there are restrictions on the amounts of investments by such banks in stock and other securities of BNY Mellon and such affiliates, and restrictions on the acceptance of their securities as collateral for loans by such banks. Extensions of credit by the banks to each of our affiliates are limited to 10% of such bank's regulatory capital, and in the aggregate for BNY Mellon and all such affiliates to 20%, and collateral must be between 100% and 130% of the amount of the credit, depending on the type of collateral.

In the event of impairment of the capital stock of one of the Parent's national banks or The Bank of New

York Mellon, the Parent, as the banks' stockholder, could be required to pay such deficiency.

The Parent guarantees the uncommitted lines of credit of Pershing LLC and Pershing Limited subsidiaries. The Parent guarantees described above are full and unconditional and contain the standard provisions relating to parent guarantees of subsidiary debt. Additionally, the Parent guarantees or indemnifies obligations of its consolidated subsidiaries as needed. Generally, there are no stated notional amounts included in these indemnifications and the contingencies triggering the obligation for indemnification are not expected to occur. As a result, we are unable to develop an estimate of the maximum payout under these indemnifications. However, we believe the possibility is remote that we will have to make any material payment under these guarantees and indemnifications.

Financial data for the Parent for 2020 includes Mellon Funding Corporation for financial reporting purposes because of the limited function of this entity and the unconditional guarantee by BNY Mellon of its obligations.

The Parent's condensed financial statements are as follows:

Condensed Income Statement—The Bank of New York Mellon Corporation (Parent Corporation)

	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Dividends from bank subsidiaries	**$ 1,006**	$ 2,490	$ 1,485
Dividends from nonbank subsidiaries	**880**	1,106	1,199
Interest revenue from bank subsidiaries	**25**	—	—
Interest revenue from nonbank subsidiaries	**37**	30	53
Other revenue	**57**	56	50
Total revenue	**2,005**	3,682	2,787
Interest expense (including $10, $6 and $30, to subsidiaries, respectively)	**853**	339	520
Other expense	**433**	153	168
Total expense	**1,286**	492	688
Income before income taxes and equity in undistributed net income of subsidiaries	**719**	3,190	2,099
(Benefit) for income taxes	**(190)**	(92)	(289)
Equity in undistributed net income:			
Bank subsidiaries	**1,696**	282	1,278
Nonbank subsidiaries	**(32)**	195	(49)
Net income	**2,573**	3,759	3,617
Preferred stock dividends and redemption charge	**(211)**	(207)	(194)
Net income applicable to common shareholders of The Bank of New York Mellon Corporation	**$ 2,362**	$ 3,552	$ 3,423

Condensed Balance Sheet—The Bank of New York Mellon Corporation (Parent Corporation)

	Dec. 31,	
(in millions)	**2022**	2021
Assets:		
Cash and due from banks	**$ 376**	$ 356
Securities	**1**	4
Investment in and advances to subsidiaries and associated companies:		
Banks	**33,795**	34,721
Other	**38,119**	37,748
Subtotal	**71,914**	72,469
Corporate-owned life insurance	**793**	786
Other assets	**610**	623
Total assets	**$ 73,694**	$ 74,238
Liabilities:		
Deferred compensation	**$ 372**	$ 435
Affiliate borrowings	**914**	3,585
Other liabilities	**1,995**	1,283
Long-term debt	**29,679**	25,901
Total liabilities	**32,960**	31,204
Shareholders' equity	**40,734**	43,034
Total liabilities and shareholders' equity	**$ 73,694**	$ 74,238

Condensed Statement of Cash Flows—The Bank of New York Mellon Corporation (Parent Corporation)

	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Operating activities:			
Net income	**$ 2,573**	$ 3,759	$ 3,617
Adjustments to reconcile net income to net cash provided by (used for) operating activities:			
Equity in undistributed net (income) of subsidiaries	**(1,664)**	(477)	(1,229)
Change in accrued interest receivable	**(8)**	75	(17)
Change in accrued interest payable	**78**	(15)	(26)
Change in taxes payable *(a)*	**(3)**	(142)	(281)
Other, net	**221**	(260)	368
Net cash provided by operating activities	**1,197**	2,940	2,432
Investing activities:			
Acquisitions of, investments in, and advances to subsidiaries *(b)*	**(1,962)**	870	(1,442)
Net cash (used for) provided by investing activities	**(1,962)**	870	(1,442)
Financing activities:			
Proceeds from issuance of long-term debt	**9,179**	5,186	2,993
Repayments of long-term debt	**(4,000)**	(4,250)	(3,950)
Change in advances from subsidiaries	**(2,917)**	820	1,195
Issuance of common stock	**23**	63	58
Issuance of preferred stock	**—**	1,287	1,567
Treasury stock acquired	**(124)**	(4,567)	(989)
Redemption of preferred stock	**—**	(1,000)	(583)
Cash dividends paid	**(1,376)**	(1,323)	(1,296)
Net cash provided by (used for) financing activities	**785**	(3,784)	(1,005)
Change in cash and due from banks	**20**	26	(15)
Cash and due from banks at beginning of year	**356**	330	345
Cash and due from banks at end of year	**$ 376**	$ 356	$ 330
Supplemental disclosures			
Interest paid	**$ 774**	$ 354	$ 546
Income taxes paid	**—**	—	3
Income taxes refunded	**—**	1	—

(a) Includes payments received from subsidiaries for taxes of $70 million in 2022, $21 million in 2021 and $736 million in 2020.

(b) Includes $2,778 million of cash outflows, net of $816 million of cash inflows in 2022, $10 million of cash outflows, net of $880 million of cash inflows in 2021 and $3,715 million of cash outflows, net of $2,273 million of cash inflows in 2020.

Note 20–Fair value measurement

Fair value is defined as the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants at the measurement date. A three-level hierarchy for fair value measurements is utilized based upon the transparency of inputs to the valuation of an asset or liability as of the measurement date. BNY Mellon's own creditworthiness is considered when valuing liabilities.

Fair value focuses on exit price in an orderly transaction (that is, not a forced liquidation or distressed sale) between market participants at the measurement date under current market conditions. If there has been a significant decrease in the volume and level of activity for the asset or liability, a change in valuation technique or the use of multiple valuation techniques may be appropriate. In such instances, determining the price at which willing market participants would transact at the measurement date under current market conditions depends on the facts and circumstances and requires the use of significant judgment. The objective is to determine from weighted indicators of fair value a reasonable point within the range that is most representative of fair value under current market conditions.

Determination of fair value

We have established processes for determining fair values. Fair value is based upon quoted market prices in active markets, where available. For financial instruments where quotes from recent exchange transactions are not available, we determine fair value based on discounted cash flow analysis, comparison to similar instruments and the use of financial models. Discounted cash flow analysis is dependent upon estimated future cash flows and the level of interest rates. Model-based pricing uses inputs of observable prices, where available, for interest rates, foreign exchange rates, option volatilities and other factors. Models are benchmarked and validated by an independent internal risk management function. Our valuation process takes into consideration factors such as counterparty credit quality, liquidity, concentration concerns and observability of model parameters. Valuation adjustments may be made to record financial instruments at fair value.

Most derivative contracts are valued using models which are calibrated to observable market data and employ standard market pricing theory for their valuations. Valuation models incorporate counterparty credit risk by discounting each trade's expected exposures to the counterparty using the counterparty's credit spreads, as implied by the credit default swap market. We also adjust expected liabilities to the counterparty using BNY Mellon's own credit spreads, as implied by the credit default swap market. Accordingly, the valuation of our derivative positions is sensitive to the current changes in our own credit spreads, as well as those of our counterparties.

In certain cases, recent prices may not be observable for instruments that trade in inactive or less active markets. Upon evaluating the uncertainty in valuing financial instruments subject to liquidity issues, we make an adjustment to their value. The determination of the liquidity adjustment includes the availability of external quotes, the time since the latest available quote and the price volatility of the instrument.

Certain parameters in some financial models are not directly observable and, therefore, are based on management's estimates and judgments. These financial instruments are normally traded less actively. We apply valuation adjustments to mitigate the possibility of error and revision in the model-based estimate value. Examples include products where parameters such as correlation and recovery rates are unobservable.

The methods described above for instruments that trade in inactive or less active markets may produce a current fair value calculation that may not be indicative of net realizable value or reflective of future fair values. We believe our methods of determining fair value are appropriate and consistent with other market participants. However, the use of different methodologies or different assumptions to value certain financial instruments could result in a different estimate of fair value.

Valuation hierarchy

A three-level valuation hierarchy is used for disclosure of fair value measurements based upon the transparency of inputs to the valuation of an asset or liability as of the measurement date. The three levels are described below.

Level 1: Inputs to the valuation methodology are quoted prices (unadjusted) for identical assets or liabilities in active markets. Level 1 assets and liabilities include certain debt and equity securities, derivative financial instruments actively traded on exchanges and highly liquid government bonds.

Level 2: Observable inputs other than Level 1 prices, for example, quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, and inputs that are observable or can be corroborated, either directly or indirectly, for substantially the full term of the financial instrument. Level 2 assets and liabilities include debt instruments that are traded less frequently than exchange-traded securities and derivative financial instruments whose model inputs are observable in the market or can be corroborated by market-observable data.

Level 3: Inputs to the valuation methodology are unobservable and significant to the fair value measurement.

A financial instrument's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

Valuation methodology

Following is a description of the valuation methodologies used for instruments measured at fair value, as well as the general classification of such instruments pursuant to the valuation hierarchy.

Securities

We determine fair value primarily based on pricing sources with reasonable levels of price transparency. Where quoted prices are available in an active market, we classify the securities within Level 1 of the valuation hierarchy. Securities include both long and short positions. Level 1 securities include U.S. Treasury and certain sovereign debt securities that are actively traded in highly liquid OTC markets, money market funds and exchange-traded equities.

If quoted market prices are not available, fair values are primarily determined using pricing models using observable trade data, market data, quoted prices of securities with similar characteristics or discounted cash flows. Examples of such instruments, which would generally be classified within Level 2 of the valuation hierarchy, include RMBS, MBS, certain sovereign debt, foreign covered bonds and CLOs.

Specifically, the pricing sources obtain recent transactions for similar types of securities (e.g., vintage, position in the securitization structure) and ascertain variables such as discount rate and speed of prepayment for the types of transaction and apply such variables to similar types of bonds. We view these as observable transactions in the current marketplace and classify such securities as Level 2. Pricing sources discontinue pricing any specific security whenever they determine there is insufficient observable data to provide a good-faith opinion on price.

At Dec. 31, 2022, approximately 99% of our securities were valued by pricing sources with reasonable levels of price transparency. The remaining securities were generally valued using observable inputs. Additional disclosures of securities are provided in Note 4.

In certain cases where there is limited activity or less transparency around inputs to the valuation, we classify those securities in Level 3 of the valuation hierarchy. As of Dec. 31, 2022, we have no instruments included in Level 3 of the valuation hierarchy.

Derivative financial instruments

We classify exchange-traded derivative financial instruments valued using quoted prices in Level 1 of the valuation hierarchy. Examples include exchange-traded equity and foreign exchange options. Since few other classes of derivative contracts are listed on an exchange, most of our derivative positions are valued using models that use as their basis readily observable market parameters, and we classify them in Level 2 of the valuation hierarchy. Such derivative financial instruments include swaps and options, foreign exchange spot and forward contracts and credit default swaps.

Derivatives valued using models with significant unobservable market parameters in markets that lack two-way flow are classified in Level 3 of the valuation hierarchy. Examples may include long-dated swaps and options, where parameters may be unobservable for longer maturities; and certain highly structured products, where correlation risk is unobservable. As of Dec. 31, 2022, we have no Level 3 derivatives. Additional disclosures of derivative instruments are provided in Note 23.

Seed capital

In our Investment and Wealth Management business segment, we make seed capital investments in certain funds we manage. Seed capital is generally included in other assets on the consolidated balance sheet. When applicable, we value seed capital based on the published NAV of the fund.

For other types of investments in funds, we consider all of the rights and obligations inherent in our ownership interest, including the reported NAV as well as other factors that affect the fair value of our interest in the fund.

Other assets measured at NAV

We hold private equity investments, primarily SBICs, which are compliant with the Volcker Rule. There are no readily available market quotations for these investment partnerships. The fair value of the SBICs is based on our ownership percentage of the fair value of the underlying investments as provided by the partnership managers. These investments are typically valued on a quarterly basis. Our SBIC private equity investments are valued at NAV as a practical expedient for fair value.

The following tables present the financial instruments carried at fair value at Dec. 31, 2022 and Dec. 31, 2021, by caption on the consolidated balance sheet and by the three-level valuation hierarchy. We have included credit ratings information in certain of the tables because the information indicates the degree of credit risk to which we are exposed, and significant changes in ratings classifications could result in increased risk for us.

Assets measured at fair value on a recurring basis at Dec. 31, 2022 *(dollars in millions)*	Level 1	Level 2	Level 3	Netting *(a)*	Total carrying value
Available-for-sale securities:					
U.S. Treasury	$ 29,533	$ —	$ —	$ —	$ 29,533
Sovereign debt/sovereign guaranteed	4,237	6,127	—	—	10,364
Agency RMBS	—	8,957	—	—	8,957
Agency commercial MBS	—	8,060	—	—	8,060
Supranational	—	7,734	—	—	7,734
Foreign covered bonds	—	5,758	—	—	5,758
CLOs	—	5,343	—	—	5,343
Non-agency commercial MBS	—	2,977	—	—	2,977
U.S. government agencies	—	2,294	—	—	2,294
Foreign government agencies	—	2,241	—	—	2,241
Non-agency RMBS	—	2,029	—	—	2,029
Other ABS	—	1,319	—	—	1,319
State and political subdivisions	—	12	—	—	12
Other debt securities	—	1	—	—	1
Total available-for-sale securities	33,770	52,852	—	—	86,622
Trading assets:					
Debt instruments	1,590	1,901	—	—	3,491
Equity instruments	3,791	—	—	—	3,791
Derivative assets not designated as hedging:					
Interest rate	10	1,287	—	(986)	311
Foreign exchange	—	9,433	—	(7,215)	2,218
Equity and other contracts	4	98	—	(5)	97
Total derivative assets not designated as hedging	14	10,818	—	(8,206)	2,626
Total trading assets	5,395	12,719	—	(8,206)	9,908
Other assets:					
Derivative assets designated as hedging:					
Interest rate	—	205	—	—	205
Foreign exchange	—	114	—	—	114
Total derivative assets designated as hedging	—	319	—	—	319
Other assets *(b)*	294	220	—	—	514
Total other assets	294	539	—	—	833
Assets measured at NAV *(b)*					138
Total assets	**$ 39,459**	**$ 66,110**	**$ —**	**$ (8,206)**	**$ 97,501**
Percentage of total assets prior to netting	37 %	63 %	— %		

Liabilities measured at fair value on a recurring basis at Dec. 31, 2022 *(dollars in millions)*	Level 1	Level 2	Level 3	Netting *(a)*	Total carrying value
Trading liabilities:					
Debt instruments	$ 2,373	$ 101	$ —	$ —	$ 2,474
Equity instruments	97	—	—	—	97
Derivative liabilities not designated as hedging:					
Interest rate	6	1,578	—	(798)	786
Foreign exchange	—	9,456	—	(7,444)	2,012
Equity and other contracts	—	17	—	(1)	16
Total derivative liabilities not designated as hedging	6	11,051	—	(8,243)	2,814
Total trading liabilities	2,476	11,152	—	(8,243)	5,385
Other liabilities					
Derivative liabilities designated as hedging:					
Interest rate	—	—	—	—	—
Foreign exchange	—	220	—	—	220
Total derivative liabilities designated as hedging	—	220	—	—	220
Other liabilities	—	1	—	—	1
Total other liabilities	—	**221**	—	—	**221**
Total liabilities	**$ 2,476**	**$ 11,373**	**$ —**	**$ (8,243)**	**$ 5,606**
Percentage of total liabilities prior to netting	18 %	82 %	— %		

(a) ASC 815, Derivatives and Hedging, permits the netting of derivative receivables and derivative payables under legally enforceable master netting agreements and permits the netting of cash collateral. Netting is applicable to derivatives not designated as hedging instruments included in trading assets or trading liabilities and derivatives designated as hedging instruments included in other assets or other liabilities. Netting is allocated to the derivative products based on the net fair value of each product.

(b) Includes seed capital, private equity investments and other assets.

Assets and liabilities measured at fair value on a recurring basis at Dec. 31, 2021 *(dollars in millions)*	Level 1	Level 2	Level 3	Netting *(a)*	Total carrying value
Assets:					
Available-for-sale securities:					
U.S. Treasury	$ 29,409	$ —	$ —	$ —	$ 29,409
Agency RMBS	—	14,530	—	—	14,530
Sovereign debt/sovereign guaranteed	6,017	7,362	—	—	13,379
Agency commercial MBS	—	8,405	—	—	8,405
Supranational	—	7,573	—	—	7,573
Foreign covered bonds	—	6,238	—	—	6,238
CLOs	—	4,439	—	—	4,439
Non-agency commercial MBS	—	3,125	—	—	3,125
Non-agency RMBS	—	2,748	—	—	2,748
Foreign government agencies	—	2,686	—	—	2,686
U.S. government agencies	—	2,536	—	—	2,536
State and political subdivisions	—	2,514	—	—	2,514
Other ABS	—	2,190	—	—	2,190
Corporate bonds	—	2,066	—	—	2,066
Other debt securities	—	1	—	—	1
Total available-for-sale securities	35,426	66,413	—	—	101,839
Trading assets:					
Debt instruments	1,447	2,750	—	—	4,197
Equity instruments	9,766	—	—	—	9,766
Derivative assets not designated as hedging:					
Interest rate	6	3,253	—	(1,424)	1,835
Foreign exchange	—	6,279	—	(5,501)	778
Equity and other contracts	—	49	—	(48)	1
Total derivative assets not designated as hedging	6	9,581	—	(6,973)	2,614
Total trading assets	11,219	12,331	—	(6,973)	16,577
Other assets*:*					
Derivative assets designated as hedging:					
Foreign exchange	—	206	—	—	206
Total derivative assets designated as hedging	—	206	—	—	206
Other assets *(b)*	438	325	—	—	763
Total other assets	438	531	—	—	969
Assets measured at NAV *(b)*					218
Total assets	$ 47,083	$ 79,275	$ —	$ (6,973)	$ 119,603
Percentage of total assets prior to netting	37 %	63 %	— %		
Liabilities:					
Trading liabilities:					
Debt instruments	$ 2,452	$ 46	$ —	$ —	$ 2,498
Equity instruments	40	—	—	—	40
Derivative liabilities not designated as hedging:					
Interest rate	1	2,834	—	(2,028)	807
Foreign exchange	—	6,215	—	(4,111)	2,104
Equity and other contracts	5	211	—	(196)	20
Total derivative liabilities not designated as hedging	6	9,260	—	(6,335)	2,931
Total trading liabilities	2,498	9,306	—	(6,335)	5,469
Other liabilities:					
Derivative liabilities designated as hedging:					
Interest rate	—	453	—	—	453
Foreign exchange	—	40	—	—	40
Total derivative liabilities designated as hedging	—	493	—	—	493
Other liabilities	1	2	—	—	3
Total other liabilities	1	495	—	—	496
Total liabilities	$ 2,499	$ 9,801	$ —	$ (6,335)	$ 5,965
Percentage of total liabilities prior to netting	20 %	80 %	— %		

(a) ASC 815, Derivatives and Hedging, permits the netting of derivative receivables and derivative payables under legally enforceable master netting agreements and permits the netting of cash collateral. Netting is applicable to derivatives not designated as hedging instruments included in trading assets or trading liabilities and derivatives designated as hedging instruments included in other assets or other liabilities. Netting is allocated to the derivative products based on the net fair value of each product.

(b) Includes seed capital, private equity investments and other assets.

Details of certain available-for-sale securities measured at fair value on a recurring basis	Dec. 31, 2022						Dec. 31, 2021					
		Ratings *(a)*						Ratings *(a)*				
(dollars in millions)	Total carrying value *(b)*	AAA/ AA-	A+/ A-	BBB+/ BBB-	BB+ and lower	Not rated	Total carrying value *(b)*	AAA/ AA-	A+/ A-	BBB+/ BBB-	BB+ and lower	Not rated
Non-agency RMBS, originated in:												
2008-2022	**$ 1,728**	**100 %**	**— %**	**— %**	**— %**	**— %**	$ 2,190	100 %	— %	— %	— %	— %
2007	**54**	**—**	**6**	**—**	**40**	**54**	114	—	4	—	39	57
2006	**88**	**—**	**35**	**—**	**40**	**25**	181	—	24	—	33	43
2005	**89**	**7**	**—**	**1**	**40**	**52**	167	3	5	1	37	54
2004 and earlier	**70**	**12**	**9**	**3**	**60**	**16**	96	16	10	5	57	12
Total non-agency RMBS	**$ 2,029**	**86 %**	**2 %**	**— %**	**7 %**	**5 %**	$ 2,748	81 %	2 %	— %	8 %	9 %
Non-agency commercial MBS originated in:												
2009-2022	**$ 2,977**	**100 %**	**— %**	**— %**	**— %**	**— %**	$ 3,125	100 %	— %	— %	— %	— %
Foreign covered bonds:												
Canada	**$ 2,384**	**100 %**	**— %**	**— %**	**— %**	**— %**	$ 2,332	100 %	— %	— %	— %	— %
UK	**1,215**	**100**	**—**	**—**	**—**	**—**	1,141	100	—	—	—	—
Australia	**696**	**100**	**—**	**—**	**—**	**—**	762	100	—	—	—	—
Germany	**542**	**100**	**—**	**—**	**—**	**—**	638	100	—	—	—	—
Norway	**377**	**100**	**—**	**—**	**—**	**—**	457	100	—	—	—	—
Other	**544**	**100**	**—**	**—**	**—**	**—**	908	100	—	—	—	—
Total foreign covered bonds	**$ 5,758**	**100 %**	**— %**	**— %**	**— %**	**— %**	$ 6,238	100 %	— %	— %	— %	— %
Sovereign debt/sovereign guaranteed:												
Germany	**$ 3,103**	**100 %**	**— %**	**— %**	**— %**	**— %**	$ 3,585	100 %	— %	— %	— %	— %
UK	**2,225**	**100**	**—**	**—**	**—**	**—**	1,969	100	—	—	—	—
France	**1,665**	**100**	**—**	**—**	**—**	**—**	1,921	100	—	—	—	—
Singapore	**797**	**100**	**—**	**—**	**—**	**—**	1,018	100	—	—	—	—
Canada	**702**	**100**	**—**	**—**	**—**	**—**	630	100	—	—	—	—
Japan	**475**	**—**	**100**	**—**	**—**	**—**	363	—	100	—	—	—
Italy	**390**	**—**	**—**	**100**	**—**	**—**	1,382	—	—	100	—	—
Hong Kong	**273**	**100**	**—**	**—**	**—**	**—**	531	100	—	—	—	—
Spain	**214**	**—**	**40**	**60**	**—**	**—**	782	—	8	92	—	—
Other *(c)*	**520**	**70**	**6**	**—**	**24**	**—**	1,198	71	19	—	10	—
Total sovereign debt/sovereign guaranteed	**$ 10,364**	**88 %**	**6 %**	**5 %**	**1 %**	**— %**	$ 13,379	78 %	5 %	16 %	1 %	— %
Foreign government agencies:												
Canada	**$ 652**	**83 %**	**17 %**	**— %**	**— %**	**— %**	$ 566	78 %	22 %	— %	— %	— %
Norway	**427**	**100**	**—**	**—**	**—**	**—**	269	100	—	—	—	—
Netherlands	**363**	**100**	**—**	**—**	**—**	**—**	765	100	—	—	—	—
Sweden	**260**	**100**	**—**	**—**	**—**	**—**	252	100	—	—	—	—
France	**240**	**100**	**—**	**—**	**—**	**—**	301	100	—	—	—	—
Other	**299**	**100**	**—**	**—**	**—**	**—**	533	82	18	—	—	—
Total foreign government agencies	**$ 2,241**	**95 %**	**5 %**	**— %**	**— %**	**— %**	$ 2,686	92 %	8 %	— %	— %	— %

(a) Represents ratings by S&P or the equivalent.

(b) At Dec. 31, 2022 and Dec. 31, 2021, sovereign debt/sovereign guaranteed securities were included in Level 1 and Level 2 in the valuation hierarchy. All other assets in the table are Level 2 assets in the valuation hierarchy.

(c) Includes non-investment grade sovereign debt/sovereign guaranteed securities related to Brazil of $123 million at Dec. 31, 2022 and $119 million at Dec. 31, 2021.

Assets and liabilities measured at fair value on a nonrecurring basis

Under certain circumstances, we make adjustments to the fair value of our assets, liabilities and unfunded lending-related commitments, although they are not measured at fair value on an ongoing basis. The following table presents the carrying value as of Dec. 31, 2022 and Dec. 31, 2021 of financial instruments for which nonrecurring adjustments to fair value have been recorded during 2022 and/or 2021 and all non-readily marketable equity securities carried at cost with upward or downward adjustments by balance sheet caption and level in the fair value hierarchy.

Assets measured at fair value on a nonrecurring basis	**Dec. 31, 2022**				Dec. 31, 2021			
(in millions)	Level 1	Level 2	Level 3	Total carrying value	Level 1	Level 2	Level 3	Total carrying value
Loans *(a)*	**$ — $**	**33 $**	**— $**	**33**	$ — $	42 $	— $	42
Other assets *(b)*	—	**448**	—	**448**	—	265	—	265
Total assets at fair value on a nonrecurring basis	**$ — $**	**481 $**	**— $**	**481**	$ — $	307 $	— $	307

(a) The fair value of these loans was unchanged in 2022 and decreased less than $1 million in 2021, based on the fair value of the underlying collateral, as required by guidance in ASC 326, Financial Instruments – Credit Losses, with an offset to the allowance for credit losses.
(b) Includes non-readily marketable equity securities carried at cost with upward or downward adjustments and other assets received in satisfaction of debt.

Estimated fair value of financial instruments

The following tables present the estimated fair value and the carrying amount of financial instruments not carried at fair value on the consolidated balance sheet at Dec. 31, 2022 and Dec. 31, 2021, by caption on the consolidated balance sheet and by the valuation hierarchy.

Summary of financial instruments	**Dec. 31, 2022**				
(in millions)	Level 1	Level 2	Level 3	Total estimated fair value	Carrying amount
Assets:					
Interest-bearing deposits with the Federal Reserve and other central banks	$ — $	91,655 $	— $	91,655 $	91,655
Interest-bearing deposits with banks	—	17,167	—	17,167	17,169
Federal funds sold and securities purchased under resale agreements	—	24,298	—	24,298	24,298
Securities held-to-maturity	10,948	39,044	—	49,992	56,194
Loans *(a)*	—	64,668	—	64,668	65,230
Other financial assets	5,030	1,817	—	6,847	6,847
Total	**$ 15,978 $**	**238,649 $**	**— $**	**254,627 $**	**261,393**
Liabilities:					
Noninterest-bearing deposits	$ — $	78,017 $	— $	78,017 $	78,017
Interest-bearing deposits	—	196,258	—	196,258	200,953
Federal funds purchased and securities sold under repurchase agreements	—	12,335	—	12,335	12,335
Payables to customers and broker-dealers	—	23,435	—	23,435	23,435
Borrowings	—	911	—	911	911
Long-term debt	—	28,977	—	28,977	30,458
Total	**$ — $**	**339,933 $**	**— $**	**339,933 $**	**346,109**

(a) Does not include the leasing portfolio.

Summary of financial instruments	Dec. 31, 2021				
(in millions)	Level 1	Level 2	Level 3	Total estimated fair value	Carrying amount
Assets:					
Interest-bearing deposits with the Federal Reserve and other central banks	$ —	$ 102,467	$ —	$ 102,467	$ 102,467
Interest-bearing deposits with banks	—	16,636	—	16,636	16,630
Federal funds sold and securities purchased under resale agreements	—	29,607	—	29,607	29,607
Securities held-to-maturity	12,488	44,287	—	56,775	56,866
Loans *(a)*	—	67,026	—	67,026	66,860
Other financial assets	6,061	1,239	—	7,300	7,300
Total	$ 18,549	$ 261,262	$ —	$ 279,811	$ 279,730
Liabilities:					
Noninterest-bearing deposits	$ —	$ 93,695	$ —	$ 93,695	$ 93,695
Interest-bearing deposits	—	224,665	—	224,665	225,999
Federal funds purchased and securities sold under repurchase agreements	—	11,566	—	11,566	11,566
Payables to customers and broker-dealers	—	25,150	—	25,150	25,150
Borrowings	—	956	—	956	956
Long-term debt	—	26,701	—	26,701	25,931
Total	$ —	$ 382,733	$ —	$ 382,733	$ 383,297

(a) Does not include the leasing portfolio.

Note 21–Fair value option

We elected fair value as an alternative measurement for selected financial assets and liabilities that are not otherwise required to be measured at fair value, including the assets and liabilities of consolidated investment management funds and subordinated notes associated with certain equity investments.

The following table presents the assets and liabilities of consolidated investment management funds, at fair value.

Assets and liabilities of consolidated investment management funds, at fair value	Dec. 31,	
(in millions)	**2022**	2021
Assets of consolidated investment management funds:		
Trading assets	**$ 203**	$ 443
Other assets	**6**	19
Total assets of consolidated investment management funds	**$ 209**	$ 462
Liabilities of consolidated investment management funds:		
Other liabilities	**$ 1**	$ 3
Total liabilities of consolidated investment management funds	**$ 1**	$ 3

The assets and liabilities of the consolidated investment management funds are included in other assets and other liabilities on the consolidated balance sheet. We value the assets and liabilities of consolidated investment management funds using quoted prices for identical assets or liabilities in active markets or observable inputs such as quoted prices for similar assets or liabilities. Quoted prices for either identical or similar assets or liabilities in inactive markets may also be used. Accordingly, fair value best reflects the interests BNY Mellon holds in the economic performance of the consolidated investment management funds. Changes in the fair value of the assets and liabilities are recorded as income (loss) from consolidated investment management funds, which is included in investment and other revenue in the consolidated income statement.

We elected the fair value option on subordinated notes associated with certain equity investments. The fair value of these subordinated notes was $10 million at Dec. 31, 2022 and $15 million at Dec. 31, 2021, and are included in other assets on the consolidated balance sheet. The subordinated notes were valued using observable market inputs and included in Level 2 of the valuation hierarchy.

We elected the fair value option on certain long-term debt that matured in 2021. The decrease in fair value of this long-term debt was $13 million in 2020 and was approximately offset by an economic hedge, both of which were recorded in investment and other revenue - other trading revenue in the consolidated income statement.

Note 22–Commitments and contingent liabilities

Off-balance sheet arrangements

In the normal course of business, various commitments and contingent liabilities are outstanding that are not reflected in the accompanying consolidated balance sheets.

Our significant trading and off-balance sheet risks are securities, foreign currency and interest rate risk management products, commercial lending commitments, letters of credit and securities lending indemnifications. We assume these risks to reduce interest rate and foreign currency risks, to provide customers with the ability to meet credit and liquidity needs and to hedge foreign currency and interest rate risks. These items involve, to varying degrees, credit, foreign currency and interest rate risks not recognized on the balance sheet. Our off-balance sheet risks are managed and monitored in manners similar to those used for on-balance sheet risks.

The following table presents a summary of our off-balance sheet credit risks.

Off-balance sheet credit risks *(in millions)*	**Dec. 31, 2022**	Dec. 31, 2021
Lending commitments	**$ 49,750**	$ 46,183
Standby letters of credit ("SBLC") *(a)*	**1,918**	1,971
Commercial letters of credit	**19**	56
Securities lending indemnifications *(b)(c)*	**491,043**	487,298

(a) Net of participations totaling $175 million at Dec. 31, 2022 and $128 million at Dec. 31, 2021.

(b) Excludes the indemnification for securities for which BNY Mellon acts as an agent on behalf of CIBC Mellon clients, which totaled $64 billion at Dec. 31, 2022 and $67 billion at Dec. 31, 2021.

(c) Includes cash collateral, invested in indemnified repurchase agreements, held by us as securities lending agent of $43 billion at Dec. 31, 2022 and $48 billion at Dec. 31, 2021.

The total potential loss on undrawn lending commitments, standby and commercial letters of credit, and securities lending indemnifications is equal to the total notional amount if drawn upon, which does not consider the value of any collateral.

Since many of the lending commitments are expected to expire without being drawn upon, the total amount does not necessarily represent future cash requirements. A summary of lending commitment maturities is as follows: $29.1 billion in less than one year, $20.3 billion in one to five years and $424 million over five years.

SBLCs principally support obligations of corporate clients and were collateralized with cash and securities of $144 million at Dec. 31, 2022 and $172 million at Dec. 31, 2021. At Dec. 31, 2022, $1.3 billion of the SBLCs will expire within one year, $666 million in one to five years and none over five years.

We must recognize, at the inception of an SBLC and foreign and other guarantees, a liability for the fair value of the obligation undertaken in issuing the guarantee. The fair value of the liability, which was recorded with a corresponding asset in other assets, was estimated as the present value of contractual customer fees. The estimated liability for losses related to SBLCs and foreign and other guarantees, if any, is included in the allowance for lending-related commitments.

Payment/performance risk of SBLCs is monitored using both historical performance and internal ratings criteria. BNY Mellon's historical experience is that SBLCs typically expire without being funded. SBLCs below investment grade are monitored closely for payment/performance risk. The table below shows SBLCs by investment grade:

Standby letters of credit	**Dec. 31, 2022**	Dec. 31, 2021
Investment grade	**75 %**	85 %
Non-investment grade	**25 %**	15 %

A commercial letter of credit is normally a short-term instrument used to finance a commercial contract for the shipment of goods from a seller to a buyer. Although the commercial letter of credit is contingent upon the satisfaction of specified conditions, it represents a credit exposure if the buyer defaults on the underlying transaction. As a result, the total contractual amounts do not necessarily represent future cash requirements. Commercial letters of credit totaled $19 million at Dec. 31, 2022 and $56 million at Dec. 31, 2021.

We expect many of the lending commitments and letters of credit to expire without the need to advance any cash. The revenue associated with guarantees frequently depends on the credit rating of the obligor and the structure of the transaction, including

collateral, if any. The allowance for lending-related commitments was $78 million at Dec. 31, 2022 and $45 million at Dec. 31, 2021.

A securities lending transaction is a fully collateralized transaction in which the owner of a security agrees to lend the security (typically through an agent, in our case, The Bank of New York Mellon) to a borrower, usually a broker-dealer or bank, on an open, overnight or term basis, under the terms of a prearranged contract.

We typically lend securities with indemnification against borrower default. We generally require the borrower to provide collateral with a minimum value of 102% of the fair value of the securities borrowed, which is monitored on a daily basis, thus reducing credit risk. Market risk can also arise in securities lending transactions. These risks are controlled through policies limiting the level of risk that can be undertaken. Securities lending transactions are generally entered into only with highly rated counterparties. Securities lending indemnifications were secured by collateral of $515 billion at Dec. 31, 2022 and $511 billion at Dec. 31, 2021.

CIBC Mellon, a joint venture between BNY Mellon and the Canadian Imperial Bank of Commerce ("CIBC"), engages in securities lending activities. CIBC Mellon, BNY Mellon and CIBC jointly and severally indemnify securities lenders against specific types of borrower default. At Dec. 31, 2022 and Dec. 31, 2021, $64 billion and $67 billion, respectively, of borrowings at CIBC Mellon, for which BNY Mellon acts as agent on behalf of CIBC Mellon clients, were secured by collateral of $68 billion and $71 billion, respectively. If, upon a default, a borrower's collateral was not sufficient to cover its related obligations, certain losses related to the indemnification could be covered by the indemnitors.

Unsettled repurchase and reverse repurchase agreements

In the normal course of business, we enter into repurchase agreements and reverse repurchase agreements that settle at a future date. In repurchase agreements, BNY Mellon receives cash from and provides securities as collateral to a counterparty at settlement. In reverse repurchase agreements, BNY Mellon advances cash to and receives securities as collateral from the counterparty at settlement. These transactions are recorded on the consolidated balance sheet on the settlement date. At Dec. 31, 2022, we had $4.0 billion of unsettled repurchase agreements and $11.3 billion of unsettled reverse repurchase agreements. At Dec. 31, 2021, we had $2.6 billion of unsettled repurchase agreements and $9.1 billion of unsettled reverse repurchase agreements.

Industry concentrations

We have significant industry concentrations related to credit exposure at Dec. 31, 2022. The tables below present our credit exposure in the financial institutions and commercial portfolios.

Financial institutions portfolio exposure *(in billions)*	**Dec. 31, 2022**		
	Loans	**Unfunded commitments**	**Total exposure**
Securities industry	**$ 1.6**	**$ 17.5**	**$ 19.1**
Asset managers	**1.6**	**7.6**	**9.2**
Banks	**6.1**	**1.5**	**7.6**
Insurance	**0.1**	**3.8**	**3.9**
Government	**—**	**0.2**	**0.2**
Other	**0.3**	**1.1**	**1.4**
Total	**$ 9.7**	**$ 31.7**	**$ 41.4**

Commercial portfolio exposure *(in billions)*	**Dec. 31, 2022**		
	Loans	**Unfunded commitments**	**Total exposure**
Manufacturing	**$ 0.5**	**$ 4.1**	**$ 4.6**
Energy and utilities	**0.3**	**3.7**	**4.0**
Services and other	**0.8**	**3.2**	**4.0**
Media and telecom	**0.1**	**0.7**	**0.8**
Total	**$ 1.7**	**$ 11.7**	**$ 13.4**

Major concentrations in securities lending are primarily to broker-dealers and are generally collateralized with cash and/or securities.

Sponsored member repo program

BNY Mellon is a sponsoring member in the Fixed Income Clearing Corporation ("FICC") sponsored member program, where we submit eligible repurchase and reverse repurchase transactions in U.S. Treasury and agency securities ("Sponsored Member Transactions") between BNY Mellon and our sponsored member clients for novation and clearing through FICC pursuant to the FICC Government Securities Division rulebook (the "FICC Rules"). We also guarantee to FICC the prompt and full payment and performance of our sponsored member clients' respective obligations under the FICC Rules in connection with such clients'

Sponsored Member Transactions. We minimize our credit exposure under this guaranty by obtaining a security interest in our sponsored member clients' collateral and rights under Sponsored Member Transactions. See "Offsetting assets and liabilities" in Note 23 for additional information on our repurchase and reverse repurchase agreements.

Indemnification arrangements

We have provided standard representations for underwriting agreements, acquisition and divestiture agreements, sales of loans and commitments, and other similar types of arrangements and customary indemnification for claims and legal proceedings related to providing financial services that are not otherwise included above. Insurance has been purchased to mitigate certain of these risks. Generally, there are no stated or notional amounts included in these indemnifications and the contingencies triggering the obligation for indemnification are not expected to occur. Furthermore, often counterparties to these transactions provide us with comparable indemnifications. We are unable to develop an estimate of the maximum payout under these indemnifications for several reasons. In addition to the lack of a stated or notional amount in a majority of such indemnifications, we are unable to predict the nature of events that would trigger indemnification or the level of indemnification for a certain event. We believe, however, that the possibility that we will have to make any material payments for these indemnifications is remote. At Dec. 31, 2022 and Dec. 31, 2021, we have not recorded any material liabilities under these arrangements.

Clearing and settlement exchanges

We are a noncontrolling equity investor in, and/or member of, several industry clearing or settlement exchanges through which foreign exchange, securities, derivatives or other transactions settle. Certain of these industry clearing and settlement exchanges require their members to guarantee their obligations and liabilities and/or to provide liquidity support in the event other members do not honor their obligations. We believe the likelihood that a clearing or settlement exchange (of which we are a member) would become insolvent is remote. Additionally, certain settlement exchanges have implemented loss allocation policies that enable the exchange to allocate settlement losses to the members of the exchange. It is not possible to quantify such mark-to-market loss until the loss occurs. Any ancillary costs that occur as a result of any mark-to-market loss cannot be quantified. In addition, we also sponsor clients as members on clearing and settlement exchanges and guarantee their obligations. At Dec. 31, 2022 and Dec. 31, 2021, we did not record any material liabilities under these arrangements.

Legal proceedings

In the ordinary course of business, The Bank of New York Mellon Corporation and its subsidiaries are routinely named as defendants in or made parties to pending and potential legal actions. We also are subject to governmental and regulatory examinations, information-gathering requests, investigations and proceedings (both formal and informal). Claims for significant monetary damages are often asserted in many of these legal actions, while claims for disgorgement, restitution, penalties and/or other remedial actions or sanctions may be sought in governmental and regulatory matters. It is inherently difficult to predict the eventual outcomes of such matters given their complexity and the particular facts and circumstances at issue in each of these matters. However, on the basis of our current knowledge and understanding, we do not believe that judgments, settlements or orders, if any, arising from these matters (either individually or in the aggregate, after giving effect to applicable reserves and insurance coverage) will have a material adverse effect on the consolidated financial position or liquidity of BNY Mellon, although they could have a material effect on our results of operations in a given period.

In view of the inherent unpredictability of outcomes in litigation and regulatory matters, particularly where (i) the damages sought are substantial or indeterminate, (ii) the proceedings are in the early stages, or (iii) the matters involve novel legal theories or a large number of parties, as a matter of course there is considerable uncertainty surrounding the timing or ultimate resolution of litigation and regulatory matters, including a possible eventual loss, fine, penalty or business impact, if any, associated with each such matter. In accordance with applicable accounting guidance, we establish accruals for litigation and regulatory matters when those matters proceed to a stage where they present loss contingencies that are both probable and reasonably estimable. In such cases, there may be a possible exposure to loss in excess of any amounts accrued.

We regularly monitor such matters for developments that could affect the amount of the accrual, and will adjust the accrual amount as appropriate. If the loss contingency in question is not both probable and reasonably estimable, we do not establish an accrual and the matter continues to be monitored for any developments that would make the loss contingency both probable and reasonably estimable. We believe that our accruals for legal proceedings are appropriate and, in the aggregate, are not material to the consolidated financial position of BNY Mellon, although future accruals could have a material effect on the results of operations in a given period. In addition, if we have the potential to recover a portion of an estimated loss from a third party, we record a receivable up to the amount of the accrual that is probable of recovery.

For certain of those matters described here for which a loss contingency may, in the future, be reasonably possible (whether in excess of a related accrued liability or where there is no accrued liability), BNY Mellon is currently unable to estimate a range of reasonably possible loss. For those matters described here where BNY Mellon is able to estimate a reasonably possible loss, the aggregate range of such reasonably possible loss is up to $520 million in excess of the accrued liability (if any) related to those matters. For matters where a reasonably possible loss is denominated in a foreign currency, our estimate is adjusted quarterly based on prevailing exchange rates. We do not consider potential recoveries when estimating reasonably possible losses.

The following describes certain judicial, regulatory and arbitration proceedings involving BNY Mellon:

Mortgage-Securitization Trusts Proceedings

BNY Mellon has been named as a defendant in a number of legal actions brought by MBS investors alleging that the trustee has expansive duties under the governing agreements, including the duty to investigate and pursue breach of representation and warranty claims against other parties to the MBS transactions. Three actions commenced in December 2014, December 2015 and February 2017 are pending in New York federal court. In New York state court, seven actions are pending: one case commenced in May 2016; three related cases commenced in September 2021 (two cases) and October 2022; and three related cases commenced in October 2021, December 2021 and February 2022.

Matters Related to R. Allen Stanford

In late December 2005, Pershing LLC ("Pershing") became a clearing firm for Stanford Group Co. ("SGC"), a registered broker-dealer that was part of a group of entities ultimately controlled by R. Allen Stanford ("Stanford"). Stanford International Bank, also controlled by Stanford, issued certificates of deposit ("CDs"). Some investors allegedly wired funds from their SGC accounts to purchase CDs. In 2009, the Securities and Exchange Commission charged Stanford with operating a Ponzi scheme in connection with the sale of CDs, and SGC was placed into receivership. Alleged purchasers of CDs have filed two putative class action proceedings against Pershing: one in November 2009 in Texas federal court, and one in May 2016 in New Jersey federal court. On Nov. 5, 2021, the court dismissed the class action filed in New Jersey and that matter has concluded. Three lawsuits remain against Pershing in Louisiana and New Jersey federal courts, which were filed in January 2010, October 2015 and May 2016. The purchasers allege that Pershing, as SGC's clearing firm, assisted Stanford in a fraudulent scheme and assert contractual, statutory and common law claims. In March 2019, a group of investors filed a putative class action against The Bank of New York Mellon in New Jersey federal court, making the same allegations as in the prior actions brought against Pershing. On Nov. 12, 2021, the court dismissed the class action against The Bank of New York Mellon; on Dec. 15, 2022, an appeals court reversed the dismissal and returned the case to the trial court for further proceedings. All the cases that have been brought in federal court against Pershing have been consolidated in Texas federal court for discovery purposes. Various alleged Stanford CD purchasers asserted similar claims in Financial Industry Regulatory Authority, Inc. ("FINRA") arbitration proceedings.

Brazilian Postalis Litigation

BNY Mellon Servicos Financeiros DTVM S.A. ("DTVM"), a subsidiary that provides asset services in Brazil, acts as administrator for certain investment funds in which a public pension fund for postal workers called Postalis-Instituto de Seguridade Social dos Correios e Telégrafos ("Postalis") invested. On Aug. 22, 2014, Postalis sued DTVM in Rio de Janeiro, Brazil for losses related to a Postalis fund for which DTVM is administrator. Postalis alleges that DTVM failed to properly perform duties, including to conduct due diligence of and exert control over the manager. On March 12, 2015, Postalis filed a lawsuit

in Rio de Janeiro against DTVM and BNY Mellon Administração de Ativos Ltda. ("Ativos") alleging failure to properly perform duties relating to another fund of which DTVM is administrator and Ativos is manager. On Dec. 14, 2015, Associacão dos Profissionais dos Correios ("ADCAP"), a Brazilian postal workers association, filed a lawsuit in São Paulo against DTVM and other defendants alleging that DTVM improperly contributed to Postalis investment losses. On March 20, 2017, the lawsuit was dismissed without prejudice, and ADCAP appealed. On Aug. 4, 2021, the appellate court overturned the dismissal and sent the lawsuit to a state lower court. On Dec. 17, 2015, Postalis filed three lawsuits in Rio de Janeiro against DTVM and Ativos alleging failure to properly perform duties with respect to investments in several other funds. On May 20, 2021, the court in one of those lawsuits entered a judgment of approximately $3 million against DTVM and Ativos. On Aug. 23, 2021, DTVM and Ativos filed an appeal of the May 20 decision. On June 7, 2022, the appellate court partially granted and partially denied the appeal, reducing the judgment to approximately $2 million. DTVM and Ativos intend to file a further appeal. On Aug. 24, 2022, the court dismissed one of the other lawsuits. On Nov. 24, 2022, Postalis appealed that decision. On Feb. 4, 2016, Postalis filed a lawsuit in Brasilia against DTVM, Ativos and BNY Mellon Alocação de Patrimônio Ltda. ("Alocação de Patrimônio"), an investment management subsidiary, alleging failure to properly perform duties and liability for losses with respect to investments in various funds of which the defendants were administrator and/or manager. On Jan. 16, 2018, the Brazilian Federal Prosecution Service ("MPF") filed a civil lawsuit in São Paulo against DTVM alleging liability for Postalis losses based on alleged failures to properly perform certain duties as administrator to certain funds in which Postalis invested or as controller of Postalis's own investment portfolio. On April 18, 2018, the court dismissed the lawsuit without prejudice. On Aug. 4, 2021, the appellate court overturned the dismissal and returned the lawsuit to the lower court. On April 11, 2022, DTVM appealed the Aug. 4 decision to Brazil's Superior Court of Justice. In addition, the Tribunal de Contas da União ("TCU"), an administrative tribunal, has initiated three proceedings with the purpose of determining liability for losses to three investment funds administered by DTVM in which Postalis was an investor. On Sept. 9, 2020, TCU rendered a decision in one of the proceedings, finding DTVM and two former Postalis directors jointly and severally liable for approximately $50 million. TCU also imposed on DTVM a fine of approximately $2 million. DTVM's administrative appeal of the decision was denied. On Feb. 25, 2022, DTVM filed a lawsuit in Brazil federal court in Brasilia seeking annulment of TCU's decision and an injunction preventing TCU from enforcing the judgment. On Aug. 24, 2022, the Brazilian Federal Attorneys filed an action in Rio de Janeiro court seeking to enforce the fine portion of the judgment. On Nov. 8, 2022, the Brasilia federal court in the annulment action granted DTVM's request for an injunction, suspending the Sept. 9, 2020 TCU decision until the annulment action is decided. On Oct. 4, 2019, Postalis and another pension fund filed a request for arbitration in São Paulo against DTVM and Ativos alleging liability for losses to an investment fund for which DTVM was administrator and Ativos was manager. On March 26, 2021, DTVM and Ativos filed a lawsuit challenging the decision rendered by the Arbitration Court with respect to its jurisdiction over the case. On Oct. 25, 2019, Postalis filed a lawsuit in Rio de Janeiro against DTVM and Alocação de Patrimônio, alleging liability for losses in another fund for which DTVM was administrator and Alocação de Patrimônio and Ativos were managers. On May 9, 2022, the court found DTVM and Alocação de Patrimônio jointly and severally liable for approximately $20 million. On Aug. 12, 2022, DTVM and Alocação de Patrimônio appealed the decision. On June 19, 2020, a lawsuit was filed in federal court in Rio de Janeiro against DTVM, Postalis, and various other defendants alleging liability against DTVM for certain Postalis losses in an investment fund of which DTVM was administrator. On Feb. 10, 2021, Postalis and another pension fund served DTVM in a lawsuit filed in Rio de Janeiro, alleging liability for losses in another investment fund for which DTVM was administrator and the other defendant was manager.

Brazilian Silverado Litigation

DTVM acts as administrator for the Fundo de Investimento em Direitos Creditórios Multisetorial Silverado Maximum ("Silverado Maximum Fund"), which invests in commercial credit receivables. On June 2, 2016, the Silverado Maximum Fund sued DTVM in its capacity as administrator, along with Deutsche Bank S.A. - Banco Alemão in its capacity as custodian and Silverado Gestão e Investimentos Ltda. in its capacity as investment manager. The Fund alleges that each of the defendants failed to

fulfill its respective duty, and caused losses to the Fund for which the defendants are jointly and severally liable.

German Tax Matters

German authorities are investigating past "cum/ex" trading, which involved the purchase of equity securities on or shortly before the dividend date, but settled after that date, potentially resulting in an unwarranted refund of withholding tax. German authorities have taken the view that past cum/ex trading may have resulted in tax avoidance or evasion. European subsidiaries of BNY Mellon have been informed by German authorities about investigations into potential cum/ex trading by certain third-party investment funds, where one of the subsidiaries had acquired entities that served as depositary and/or fund manager for those third-party investment funds. We have received information requests from the authorities relating to pre-acquisition activity and are cooperating fully with those requests. In August 2019, the District Court of Bonn ordered that one of these subsidiaries be joined as a secondary party in connection with the prosecution of unrelated individual defendants. Trial commenced in September 2019. In March 2020, the court stated that it would refrain from taking action against the subsidiary in order to expedite the conclusion of the trial. The court convicted the unrelated individual defendants, and determined that the cum/ex trading activities of the relevant third-party investment funds were unlawful. In November and December 2020, we received secondary liability notices from the German tax authorities totaling approximately $150 million (at then-prevailing exchange rates) related to pre-acquisition activity in various funds for which the entities we acquired were depositary and/or fund manager. We have appealed the notices. In connection with the acquisition of the subject entities, we obtained an indemnity for liabilities from the sellers that we intend to pursue as necessary.

Off-Channel Business-Related Communications

The Company has been responding to a request for information from the SEC concerning compliance with recordkeeping obligations relating to business communications transmitted on unapproved electronic communication platforms. SEC Staff has stated that it is conducting similar inquiries into recordkeeping practices at other financial institutions. The Company is cooperating with the inquiry.

Note 23–Derivative instruments

We use derivatives to manage exposure to market risk, including interest rate risk, equity price risk and foreign currency risk, as well as credit risk. Our trading activities are focused on acting as a market-maker for our customers and facilitating customer trades in compliance with the Volcker Rule.

The notional amounts for derivative financial instruments express the dollar volume of the transactions; however, credit risk is much smaller. We perform credit reviews and enter into netting agreements and collateral arrangements to minimize the credit risk of derivative financial instruments. We enter into offsetting positions to reduce exposure to foreign currency, interest rate and equity price risk.

Use of derivative financial instruments involves reliance on counterparties. Failure of a counterparty to honor its obligation under a derivative contract is a risk we assume whenever we engage in a derivative contract. There were no counterparty default losses recorded in 2022.

Hedging derivatives

We utilize interest rate swap agreements to manage our exposure to interest rate fluctuations. We enter into fair value hedges as an interest rate risk management strategy to reduce fair value variability by converting certain fixed rate interest payments associated with available-for-sale securities and long-term debt to floating interest rates. We also utilize interest rate swaps and forward foreign exchange contracts as cash flow hedges to manage our exposure to interest rate and foreign exchange rate changes.

The available-for-sale securities hedged consist of U.S. Treasury, agency and non-agency commercial MBS, sovereign debt/sovereign guaranteed and foreign covered bonds. At Dec. 31, 2022, $31.5 billion par value of available-for-sale securities were hedged with interest rate swaps designated as fair value hedges that had notional values of $31.4 billion.

The fixed rate long-term debt instruments hedged generally have original maturities of five to 30 years. In fair value hedging relationships, fixed rate debt is hedged with "receive fixed rate, pay variable rate" swaps. At Dec. 31, 2022, $24.7 billion par value of debt was hedged with interest rate swaps designated

as fair value hedges that had notional values of $24.7 billion.

In addition, we utilize forward foreign exchange contracts as hedges to mitigate foreign exchange exposures. We use forward foreign exchange contracts as cash flow hedges to convert certain forecasted non-U.S. dollar revenue and expenses into U.S. dollars. We use forward foreign exchange contracts with maturities of 15 months or less as cash flow hedges to hedge our foreign exchange exposure to currencies such as Indian rupee, Polish zloty, Hong Kong dollar, Singapore dollar, British pound and euro used in revenue and expense transactions for entities that have the U.S. dollar as their functional currency. As of Dec. 31, 2022, the hedged forecasted foreign currency transactions and designated forward foreign exchange contract hedges were $466 million (notional), with a pre-tax loss of $6 million recorded in accumulated OCI. This loss will be reclassified to earnings over the next 12 months.

During 2022, we utilized forward foreign exchange contracts as fair value hedges of the foreign exchange risk associated with available-for-sale securities. At Dec. 31, 2022, there were no remaining foreign exchange contracts. Forward points are designated as an excluded component and amortized into earnings over the hedge period.

Forward foreign exchange contracts are also used to hedge the value of our net investments in foreign subsidiaries. These forward foreign exchange contracts have maturities of less than one year. The derivatives employed are designated as hedges of changes in value of our foreign investments due to exchange rates. The change in fair market value of these forward foreign exchange contracts is reported within foreign currency translation adjustments in shareholders' equity, net of tax. At Dec. 31, 2022, forward foreign exchange contracts with notional amounts totaling $9.6 billion were designated as net investment hedges.

From time to time, we also designate non-derivative financial instruments as hedges of our net investments in foreign subsidiaries. At Dec. 31, 2022, there were no non-derivative financial instruments hedging our net investments in foreign subsidiaries.

The following table presents the pre-tax gains (losses) related to our fair value and cash flow hedging activities recognized in the consolidated income statement.

Income statement impact of fair value and cash flow hedges

(in millions)	Location of gains (losses)	**2022**	2021	2020
Interest rate fair value hedges of available-for-sale securities				
Derivative	Interest revenue	**$ 3,530**	$ 786	$ (627)
Hedged item	Interest revenue	**(3,517)**	(785)	624
Interest rate fair value hedges of long-term debt				
Derivative	Interest expense	**(1,441)**	(646)	587
Hedged item	Interest expense	**1,438**	645	(586)
Foreign exchange fair value hedges of available-for-sale securities				
Derivative *(a)*	Foreign exchange revenue	**(2)**	11	(9)
Hedged item	Foreign exchange revenue	**4**	(10)	11
Cash flow hedges of forecasted FX exposures				
(Loss) gain reclassified from OCI into income	Staff expense	**(9)**	12	(1)
Gain reclassified from OCI into income	Investment and other revenue	**1**	—	—
Gain (loss) recognized in the consolidated income statement due to fair value and cash flow hedging relationships		**$ 4**	$ 13	$ (1)

(a) Includes gains of $1 million in 2022, 2021 and 2020 associated with the amortization of the excluded component.

The following table presents the impact of hedging derivatives used in net investment hedging relationships.

Impact of derivative instruments used in net investment hedging relationships
(in millions)

Derivatives in net investment hedging relationships	Gain or (loss) recognized in accumulated OCI on derivatives Year ended Dec. 31,			Location of gain or (loss) reclassified from accumulated OCI into income	Gain or (loss) reclassified from accumulated OCI into income Year ended Dec. 31,		
	2022	2021	2020		**2022**	2021	2020
FX contracts	**$ 631**	$ 261	$ (284)	Net interest revenue	**$ —**	$ —	$ —

The following table presents information on the hedged items in fair value hedging relationships.

Hedged items in fair value hedging relationships	Carrying amount of hedged asset or liability		Hedge accounting basis adjustment increase (decrease) *(a)*	
	Dec. 31,		Dec. 31,	
(in millions)	**2022**	2021	**2022**	2021
Available-for-sale securities *(b)(c)*	**$ 31,370**	$ 24,400	**$ (2,678)**	$ 590
Long-term debt	**$ 23,510**	$ 22,447	**$ (1,232)**	$ 183

(a) Includes less than $1 million and $165 million of basis adjustment increases on discontinued hedges associated with available-for-sale securities at Dec. 31, 2022 and Dec. 31, 2021, respectively, and $48 million and $72 million of basis adjustment decreases on discontinued hedges associated with long-term debt at Dec. 31, 2022 and Dec. 31, 2021, respectively.
(b) Excludes hedged items where only foreign currency risk is the designated hedged risk, as the basis adjustments related to foreign currency hedges will not reverse through the consolidated income statement in future periods. The carrying amount excluded for available-for-sale securities was $— million at Dec. 31, 2022 and $141 million at Dec. 31, 2021.
(c) Carrying amount represents the amortized cost.

The following table summarizes the notional amount and carrying values of our total derivatives portfolio.

Impact of derivative instruments on the balance sheet	Notional value		Asset derivatives fair value		Liability derivatives fair value	
(in millions)	**Dec. 31, 2022**	Dec. 31, 2021	**Dec. 31, 2022**	Dec. 31, 2021	**Dec. 31, 2022**	Dec. 31, 2021
Derivatives designated as hedging instruments: *(a)(b)*						
Interest rate contracts	**$ 56,142**	$ 46,717	**$ 205**	$ —	**$ —**	$ 453
Foreign exchange contracts	**10,096**	10,367	**114**	206	**220**	40
Total derivatives designated as hedging instruments			**$ 319**	$ 206	**$ 220**	$ 493
Derivatives not designated as hedging instruments: *(b)(c)*						
Interest rate contracts	**$ 190,917**	$ 193,747	**$ 1,297**	$ 3,259	**$ 1,584**	$ 2,835
Foreign exchange contracts	**880,948**	915,694	**9,433**	6,279	**9,456**	6,215
Equity contracts	**2,993**	9,659	**102**	49	**13**	211
Credit contracts	**200**	190	**—**	—	**4**	5
Total derivatives not designated as hedging instruments			**$ 10,832**	$ 9,587	**$ 11,057**	$ 9,266
Total derivatives fair value *(d)*			**$ 11,151**	$ 9,793	**$ 11,277**	$ 9,759
Effect of master netting agreements *(e)*			**(8,206)**	(6,973)	**(8,243)**	(6,335)
Fair value after effect of master netting agreements			**$ 2,945**	$ 2,820	**$ 3,034**	$ 3,424

(a) The fair value of asset derivatives and liability derivatives designated as hedging instruments is recorded as other assets and other liabilities, respectively, on the consolidated balance sheet.
(b) For derivative transactions settled at clearing organizations, cash collateral exchanged is deemed a settlement of the derivative each day. The settlement reduces the gross fair value of derivative assets and liabilities and results in a corresponding decrease in the effect of master netting agreements, with no impact to the consolidated balance sheet.
(c) The fair value of asset derivatives and liability derivatives not designated as hedging instruments is recorded as trading assets and trading liabilities, respectively, on the consolidated balance sheet.
(d) Fair values are on a gross basis, before consideration of master netting agreements, as required by ASC 815, Derivatives and Hedging.
(e) Effect of master netting agreements includes cash collateral received and paid of $1,786 million and $1,823 million, respectively, at Dec. 31, 2022, and $1,424 million and $786 million, respectively, at Dec. 31, 2021.

Trading activities (including trading derivatives)

Our trading activities are focused on acting as a market-maker for our customers, facilitating customer trades and risk-mitigating economic hedging in compliance with the Volcker Rule. The change in the fair value of the derivatives utilized in our trading activities is recorded in foreign exchange revenue and investment and other revenue on the consolidated income statement.

The following table presents our foreign exchange revenue and other trading revenue.

Foreign exchange revenue and other trading revenue	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Foreign exchange revenue	**$ 822**	$ 799	$ 774
Other trading revenue	**149**	6	13

Foreign exchange revenue includes income from purchasing and selling foreign currencies, currency forwards, futures and options, as well as foreign currency remeasurement. Other trading revenue reflects results from trading in cash instruments, including fixed income and equity securities, and trading and economic hedging activity with non-foreign exchange derivatives.

We also use derivative financial instruments as risk-mitigating economic hedges, which are not formally designated as accounting hedges. This includes hedging the foreign currency, interest rate or market risks inherent in some of our balance sheet exposures, such as seed capital investments and deposits, as well as certain investment management fee revenue streams. We also use total return swaps to economically hedge obligations arising from the Company's deferred compensation plan whereby the participants defer compensation and earn a return linked to the performance of investments they select. The gains or losses on these total return swaps are recorded in staff expense on the consolidated income statement and were a loss of $43 million in 2022 and gains of $35 million in 2021 and $22 million in 2020.

We manage trading risk through a system of position limits, a value-at-risk ("VaR") methodology based on historical simulation and other market sensitivity measures. Risk is monitored and reported to senior management by a separate unit, independent from trading, on a daily basis. Based on certain assumptions, the VaR methodology is designed to capture the potential overnight pre-tax dollar loss from adverse changes in fair values of all trading positions. The calculation assumes a one-day holding period, utilizes a 99% confidence level and incorporates non-linear product characteristics. The VaR model is one of several statistical models used to develop economic capital results, which are allocated to lines of business for computing risk-adjusted performance.

VaR methodology does not evaluate risk attributable to extraordinary financial, economic or other occurrences. As a result, the risk assessment process includes a number of stress scenarios based upon the risk factors in the portfolio and management's assessment of market conditions. Additional stress scenarios based upon historical market events are also performed. Stress tests may incorporate the impact of reduced market liquidity and the breakdown of historically observed correlations and extreme scenarios. VaR and other statistical measures, stress testing and sensitivity analysis are incorporated into other risk management materials.

Counterparty credit risk and collateral

We assess the credit risk of our counterparties through regular examination of their financial statements, confidential communication with the management of those counterparties and regular monitoring of publicly available credit rating information. This and other information is used to develop proprietary credit rating metrics used to assess credit quality.

Collateral requirements are determined after a comprehensive review of the credit quality of each counterparty. Collateral is generally held or pledged in the form of cash and/or highly liquid government securities. Collateral requirements are monitored and adjusted daily.

Additional disclosures concerning derivative financial instruments are provided in Note 20.

Disclosure of contingent features in OTC derivative instruments

Certain OTC derivative contracts and/or collateral agreements contain credit risk-contingent features triggered upon a rating downgrade in which the counterparty has the right to request additional

collateral or the right to terminate the contracts in a net liability position.

The following table shows the aggregate fair value of OTC derivative contracts in net liability positions that contained credit risk-contingent features and the value of collateral that has been posted.

(in millions)	**Dec. 31, 2022**	Dec. 31, 2021
Aggregate fair value of OTC derivatives in net liability positions *(a)*	**$ 3,069**	$ 3,606
Collateral posted	**$ 3,484**	$ 5,388

(a) Before consideration of cash collateral.

The aggregate fair value of OTC derivative contracts containing credit risk-contingent features can fluctuate from quarter to quarter due to changes in market conditions, composition of counterparty trades, new business or changes to the contingent features.

The Bank of New York Mellon, our largest banking subsidiary, enters into the substantial majority of our OTC derivative contracts and/or collateral agreements. As such, the contingent features may be triggered if The Bank of New York Mellon's long-term issuer rating were downgraded.

The following table shows the fair value of contracts falling under early termination provisions that were in net liability positions for three key ratings triggers.

Potential close-out exposures (fair value) *(a)*

(in millions)	**Dec. 31, 2022**	Dec. 31, 2021
If The Bank of New York Mellon's rating changed to: *(b)*		
A3/A-	**$ 20**	$ 56
Baa2/BBB	**$ 545**	$ 563
Ba1/BB+	**$ 1,803**	$ 1,778

(a) The amounts represent potential total close-out values if The Bank of New York Mellon's long-term issuer rating were to immediately drop to the indicated levels, and do not reflect collateral posted.
(b) Represents ratings by Moody's/S&P.

If The Bank of New York Mellon's debt rating had fallen below investment grade on Dec. 31, 2022 and Dec. 31, 2021, existing collateral arrangements would have required us to post additional collateral of $214 million and $71 million, respectively.

Offsetting assets and liabilities

The following tables present derivative and financial instruments and their related offsets. There were no derivative instruments or financial instruments subject to a legally enforceable netting agreement for which we are not currently netting.

Offsetting of derivative assets and financial assets at Dec. 31, 2022

(in millions)	Gross assets recognized	Gross amounts offset in the balance sheet		Net assets recognized in the balance sheet	Gross amounts not offset in the balance sheet: Financial instruments	Gross amounts not offset in the balance sheet: Cash collateral received	Net amount
Derivatives subject to netting arrangements:							
Interest rate contracts	**$ 1,208**	**$ 986**		**$ 222**	**$ 33**	**$ —**	**$ 189**
Foreign exchange contracts	**8,920**	**7,215**		**1,705**	**314**	**—**	**1,391**
Equity and other contracts	**95**	**5**		**90**	**—**	**—**	**90**
Total derivatives subject to netting arrangements	**10,223**	**8,206**		**2,017**	**347**	**—**	**1,670**
Total derivatives not subject to netting arrangements	**928**	**—**		**928**	**—**	**—**	**928**
Total derivatives	**11,151**	**8,206**		**2,945**	**347**	**—**	**2,598**
Reverse repurchase agreements	**75,614**	**60,322**	*(b)*	**15,292**	**15,182**	**—**	**110**
Securities borrowing	**9,006**	**—**		**9,006**	**8,531**	**—**	**475**
Total	**$ 95,771**	**$ 68,528**		**$ 27,243**	**$ 24,060**	**$ —**	**$ 3,183**

(a) Includes the effect of netting agreements and net cash collateral received. The offset related to the OTC derivatives was allocated to the various types of derivatives based on the net positions.
(b) Offsetting of reverse repurchase agreements relates to our involvement in the FICC, where we settle government securities transactions on a net basis for payment and delivery through the Fedwire system.

Offsetting of derivative assets and financial assets at Dec. 31, 2021

(in millions)	Gross assets recognized	Gross amounts offset in the balance sheet	*(a)*	Net assets recognized in the balance sheet	Gross amounts not offset in the balance sheet: Financial instruments	Gross amounts not offset in the balance sheet: Cash collateral received	Net amount
Derivatives subject to netting arrangements:							
Interest rate contracts	$ 2,132	$ 1,424		$ 708	$ 206	$ —	$ 502
Foreign exchange contracts	6,122	5,501		621	69	—	552
Equity and other contracts	48	48		—	—	—	—
Total derivatives subject to netting arrangements	8,302	6,973		1,329	275	—	1,054
Total derivatives not subject to netting arrangements	1,491	—		1,491	—	—	1,491
Total derivatives	9,793	6,973		2,820	275	—	2,545
Reverse repurchase agreements	72,661	54,709	*(b)*	17,952	17,922	—	30
Securities borrowing	11,655	—		11,655	11,036	—	619
Total	$ 94,109	$ 61,682		$ 32,427	$ 29,233	$ —	$ 3,194

(a) Includes the effect of netting agreements and net cash collateral received. The offset related to the OTC derivatives was allocated to the various types of derivatives based on the net positions.

(b) Offsetting of reverse repurchase agreements relates to our involvement in the FICC, where we settle government securities transactions on a net basis for payment and delivery through the Fedwire system.

Offsetting of derivative liabilities and financial liabilities at Dec. 31, 2022

(in millions)	Gross liabilities recognized	Gross amounts offset in the balance sheet	*(a)*	Net liabilities recognized in the balance sheet	Gross amounts not offset in the balance sheet: Financial instruments	Gross amounts not offset in the balance sheet: Cash collateral pledged	Net amount
Derivatives subject to netting arrangements:							
Interest rate contracts	**$ 1,306**	**$ 798**		**$ 508**	**$ 67**	**$ —**	**$ 441**
Foreign exchange contracts	**9,261**	**7,444**		**1,817**	**51**	**—**	**1,766**
Equity and other contracts	**15**	**1**		**14**	**—**	**—**	**14**
Total derivatives subject to netting arrangements	**10,582**	**8,243**		**2,339**	**118**	**—**	**2,221**
Total derivatives not subject to netting arrangements	**695**	**—**		**695**	**—**	**—**	**695**
Total derivatives	**11,277**	**8,243**		**3,034**	**118**	**—**	**2,916**
Repurchase agreements	**70,830**	**60,322**	*(b)*	**10,508**	**10,476**	**31**	**1**
Securities lending	**1,827**	**—**		**1,827**	**1,754**	**—**	**73**
Total	**$ 83,934**	**$ 68,565**		**$ 15,369**	**$ 12,348**	**$ 31**	**$ 2,990**

(a) Includes the effect of netting agreements and net cash collateral paid. The offset related to the OTC derivatives was allocated to the various types of derivatives based on the net positions.

(b) Offsetting of repurchase agreements relates to our involvement in the FICC, where we settle government securities transactions on a net basis for payment and delivery through the Fedwire system.

Offsetting of derivative liabilities and financial liabilities at Dec. 31, 2021

(in millions)	Gross liabilities recognized	Gross amounts offset in the balance sheet	*(a)*	Net liabilities recognized in the balance sheet	Gross amounts not offset in the balance sheet: Financial instruments	Gross amounts not offset in the balance sheet: Cash collateral pledged	Net amount
Derivatives subject to netting arrangements:							
Interest rate contracts	$ 3,263	$ 2,028		$ 1,235	$ 1,197	$ —	$ 38
Foreign exchange contracts	5,619	4,111		1,508	29	—	1,479
Equity and other contracts	211	196		15	—	—	15
Total derivatives subject to netting arrangements	9,093	6,335		2,758	1,226	—	1,532
Total derivatives not subject to netting arrangements	666	—		666	—	—	666
Total derivatives	9,759	6,335		3,424	1,226	—	2,198
Repurchase agreements	64,734	54,709	*(b)*	10,025	10,025	—	—
Securities lending	1,541	—		1,541	1,478	—	63
Total	$ 76,034	$ 61,044		$ 14,990	$ 12,729	$ —	$ 2,261

(a) Includes the effect of netting agreements and net cash collateral paid. The offset related to the OTC derivatives was allocated to the various types of derivatives based on the net positions.

(b) Offsetting of repurchase agreements relates to our involvement in the FICC, where we settle government securities transactions on a net basis for payment and delivery through the Fedwire system.

Secured borrowings

The following table presents the contract value of repurchase agreements and securities lending transactions accounted for as secured borrowings by the type of collateral provided to counterparties.

Repurchase agreements and securities lending transactions accounted for as secured borrowings

	Dec. 31, 2022					Dec. 31, 2021				
	Remaining contractual maturity					Remaining contractual maturity				
(in millions)	Overnight and continuous	Up to 30 days	30-90 days	Over 90 days	Total	Overnight and continuous	Up to 30 days	30-90 days	Over 90 days	Total
Repurchase agreements:										
U.S. Treasury	**$ 62,401**	**$ 7**	**$ 827**	**$ 553**	**$ 63,788**	$ 56,556	$ 304	$ 450	$ —	$ 57,310
Agency RMBS	**1,460**	**493**	**—**	**—**	**1,953**	2,795	1	—	—	2,796
Corporate bonds	**99**	**88**	**782**	**306**	**1,275**	97	77	870	270	1,314
Sovereign debt/sovereign guaranteed	**1,008**	**—**	**—**	**—**	**1,008**	160	—	—	—	160
State and political subdivisions	**38**	**49**	**443**	**159**	**689**	44	16	630	155	845
Other debt securities	**13**	**102**	**92**	**7**	**214**	—	30	245	—	275
U.S. government agencies	**161**	**—**	**—**	**—**	**161**	503	—	—	—	503
Equity securities	**—**	**61**	**1,681**	**—**	**1,742**	—	276	1,255	—	1,531
Total	**$ 65,180**	**$ 800**	**$ 3,825**	**$ 1,025**	**$ 70,830**	$ 60,155	$ 704	$ 3,450	$ 425	$ 64,734
Securities lending:										
Agency RMBS	**$ 110**	**$ —**	**$ —**	**$ —**	**$ 110**	$ 152	$ —	$ —	$ —	$ 152
Other debt securities	**66**	**—**	**—**	**—**	**66**	88	—	—	—	88
Equity securities	**1,651**	**—**	**—**	**—**	**1,651**	1,301	—	—	—	1,301
Total	**$ 1,827**	**$ —**	**$ —**	**$ —**	**$ 1,827**	$ 1,541	$ —	$ —	$ —	$ 1,541
Total secured borrowings	**$ 67,007**	**$ 800**	**$ 3,825**	**$ 1,025**	**$ 72,657**	$ 61,696	$ 704	$ 3,450	$ 425	$ 66,275

BNY Mellon's repurchase agreements and securities lending transactions primarily encounter risk associated with liquidity. We are required to pledge collateral based on predetermined terms within the agreements. If we were to experience a decline in the fair value of the collateral pledged for these transactions, we could be required to provide additional collateral to the counterparty, therefore decreasing the amount of assets available for other liquidity needs that may arise. BNY Mellon also offers tri-party collateral agency services in the tri-party repo market where we are exposed to credit risk. In order to mitigate this risk, we require dealers to fully secure intraday credit.

Note 24–Business segments

We have an internal information system that produces performance data along product and service lines for our three principal business segments and the Other segment.

The primary products and services and types of revenue for our principal businesses and a description of the Other segment are presented below.

Securities Services segment

Line of business	*Primary products and services*	*Primary types of revenue*
Asset Servicing	Custody, Trust & Depositary, accounting, ETF services, middle-office solutions, transfer agency, services for private equity and real estate funds, foreign exchange, securities lending, liquidity/lending services and data analytics	– Investment services fees (includes securities lending revenue) – Net interest revenue – Foreign exchange revenue – Financing-related fees
Issuer Services	Corporate Trust (trustee, paying agency, fiduciary, escrow and other financial services) and Depositary Receipts (issuer services and support for brokers and investors)	– Investment services fees – Net interest revenue – Foreign exchange revenue

Market and Wealth Services segment

Line of business	*Primary products and services*	*Primary types of revenue*
Pershing	Clearing and custody, investment, wealth and retirement solutions, technology and enterprise data management, trading services and prime brokerage	– Investment services fees – Net interest revenue
Treasury Services	Integrated cash management solutions including payments, foreign exchange, liquidity management, receivables processing and payables management and trade finance and processing	– Investment services fees – Net interest revenue – Foreign exchange revenue
Clearance and Collateral Management	Clearance (including U.S. government and global clearing services) and Global Collateral Management (including tri-party services)	– Investment services fees – Net interest revenue

Investment and Wealth Management segment

Line of business	*Primary products and services*	*Primary types of revenue*
Investment Management	Diversified investment management strategies and distribution of investment products	– Investment management fees – Performance fees – Distribution and servicing fees
Wealth Management	Investment management, custody, wealth and estate planning, private banking services, investment services and information management	– Investment management fees – Net interest revenue

Other segment	*Description*	*Primary types of revenue*
	Includes leasing portfolio, corporate treasury activities including our securities portfolio, derivatives and other trading activity, corporate and bank-owned life insurance, renewable energy and other corporate investments and certain business exits	– Foreign exchange revenue – Investment and other revenue – Other trading revenue – Net gain (loss) on securities – Net interest revenue (expense)

Business accounting principles

Our business data has been determined on an internal management basis of accounting, rather than GAAP, which is used for consolidated financial reporting. These measurement principles are designed so that reported results of the businesses will track their economic performance.

Business segment results are subject to reclassification when organizational changes are made, or for refinements in revenue and expense allocation methodologies. Refinements are typically reflected on a prospective basis. There were no reclassification or organizational changes in 2022.

The accounting policies of the businesses are the same as those described in Note 1.

The results of our business segments are presented and analyzed on an internal management reporting basis.

- Revenue amounts reflect fee and other revenue generated by each business and include revenue for services provided between the segments that are also provided to third parties. Fee and other revenue transferred between businesses under revenue transfer agreements is included within other fees in each segment.
- Revenues and expenses associated with specific client bases are included in those businesses. For example, foreign exchange activity associated with clients using custody products is included in the Securities Services segment.
- Net interest revenue is allocated to businesses based on the yields on the assets and liabilities generated by each business. We employ a funds transfer pricing system that matches funds with the specific assets and liabilities of each business based on their interest sensitivity and maturity characteristics.
- The provision for credit losses associated with the respective credit portfolios is reflected in each segment.
- Incentives expense related to restricted stock and RSUs is allocated to the segments.
- Support and other indirect expenses, including services provided between segments that are not provided to third parties or not subject to a revenue transfer agreement, are allocated to businesses based on internally developed methodologies and reflected in noninterest expense.
- Recurring FDIC expense is allocated to the businesses based on average deposits generated within each business.
- Severance expense is recorded in the segments based on the business or function the impacted employees reside, with severance related to corporate staff, technology and operations reflected in the Other segment.
- Litigation expense is generally recorded in the business in which the charge occurs.
- Management of the securities portfolio is a shared service contained in the Other segment. As a result, gains and losses associated with the valuation of the securities portfolio are generally included in the Other segment.
- Client deposits serve as the primary funding source for our securities portfolio. We typically allocate all interest revenue to the businesses generating the deposits. Accordingly, accretion related to the portion of the securities portfolio restructured in 2009 has been included in the results of the businesses.
- Balance sheet assets and liabilities and their related income or expense are specifically assigned to each business. Segments with a net liability position have been allocated assets.
- Goodwill and intangible assets are reflected within individual businesses.

The following consolidating schedules present the contribution of our segments to our overall profitability.

For the year ended Dec. 31, 2022 *(dollars in millions)*	Securities Services	Market and Wealth Services	Investment and Wealth Management		Other	Consolidated	
Total fee and other revenue	**$ 6,004**	**$ 3,872**	**$ 3,322**	*(a)*	**$ (312)**	**$ 12,886**	*(a)*
Net interest revenue (expense)	**2,028**	**1,410**	**228**		**(162)**	**3,504**	
Total revenue (loss)	**8,032**	**5,282**	**3,550**	*(a)*	**(474)**	**16,390**	*(a)*
Provision for credit losses	**8**	**7**	**1**		**23**	**39**	
Noninterest expense	**6,299**	**2,932**	**3,501**		**278**	**13,010**	
Income (loss) before income taxes	**$ 1,725**	**$ 2,343**	**$ 48**	*(a)*	**$ (775)**	**$ 3,341**	*(a)*
Pre-tax operating margin *(b)*	**21 %**	**44 %**	**1 %**		**N/M**	**20 %**	
Average assets	**$ 212,575**	**$ 138,386**	**$ 31,920**		**$ 44,020**	**$ 426,901**	

(a) Total fee and other revenue, total revenue and income before taxes are net of loss attributable to noncontrolling interests related to consolidated investment management funds of $13 million.
(b) Income before income taxes divided by total revenue.
N/M – Not meaningful.

For the year ended Dec. 31, 2021 *(dollars in millions)*	Securities Services	Market and Wealth Services	Investment and Wealth Management		Other	Consolidated	
Total fee and other revenue	$ 5,818	$ 3,583	$ 3,849	*(a)*	$ 51	$ 13,301	*(a)*
Net interest revenue (expense)	1,426	1,158	193		(159)	2,618	
Total revenue (loss)	7,244	4,741	4,042	*(a)*	(108)	15,919	*(a)*
Provision for credit losses	(134)	(67)	(13)		(17)	(231)	
Noninterest expense	5,852	2,676	2,825		161	11,514	
Income (loss) before income taxes	$ 1,526	$ 2,132	$ 1,230	*(a)*	$ (252)	$ 4,636	*(a)*
Pre-tax operating margin *(b)*	21 %	45 %	30 %		N/M	29 %	
Average assets	$ 228,915	$ 145,123	$ 30,980		$ 47,214	$ 452,232	

(a) Total fee and other revenue, total revenue and income before taxes are net of income attributable to noncontrolling interests related to consolidated investment management funds of $12 million.
(b) Income before income taxes divided by total revenue.
N/M – Not meaningful.

For the year ended Dec. 31, 2020 *(dollars in millions)*	Securities Services	Market and Wealth Services	Investment and Wealth Management		Other	Consolidated	
Total fee and other revenue	$ 5,678	$ 3,578	$ 3,495	*(a)*	$ 71	$ 12,822	*(a)*
Net interest revenue (expense)	1,697	1,228	197		(145)	2,977	
Total revenue (loss)	7,375	4,806	3,692	*(a)*	(74)	15,799	*(a)*
Provision for credit losses	215	100	20		1	336	
Noninterest expense	5,556	2,614	2,701		133	11,004	
Income (loss) before income taxes	$ 1,604	$ 2,092	$ 971	*(a)*	$ (208)	$ 4,459	*(a)*
Pre-tax operating margin *(b)*	22 %	44 %	26 %		N/M	28 %	
Average assets	$ 202,761	$ 123,554	$ 30,459		$ 56,544	$ 413,318	

(a) Total fee and other revenue, total revenue and income before taxes are net of income attributable to noncontrolling interests related to consolidated investment management funds of $9 million.
(b) Income before taxes divided by total revenue.
N/M – Not meaningful.

Note 25–International operations

International activity includes investment services fee revenue and investment management and performance fee revenue generating businesses, foreign exchange trading activity, loans and other revenue producing assets and transactions in which the customer is domiciled outside of the U.S. and/or the international activity is resident at an international entity. Due to the nature of our international and domestic activities, it is not possible to precisely distinguish our international operations between

internationally and domestically domiciled customers. As a result, it is necessary to make certain subjective assumptions such as:

- Income from international operations is determined after internal allocations for interest revenue, taxes, expenses and provision for credit losses.
- Expense charges to international operations include those directly incurred in connection with such activities, as well as an allocable share of general support and overhead charges.

Total assets, total revenue, income before income taxes and net income of our international operations are shown in the table below.

International operations	International					
(in millions)	Europe, the Middle East and Africa	Asia-Pacific region	Other	Total International	Total Domestic	Total
2022						
Total assets at period end *(a)*	**$ 78,074** *(b)*	**$ 11,623**	**$ 1,622**	**$ 91,319**	**$ 314,464**	**$ 405,783**
Total revenue	**3,954** *(b)*	**1,127**	**805**	**5,886**	**10,491**	**16,377**
Income before income taxes	**1,164**	**572**	**481**	**2,217**	**1,111**	**3,328**
Net income	**880**	**432**	**364**	**1,676**	**884**	**2,560**
2021						
Total assets at period end *(a)*	$ 94,507 *(b)*	$ 20,280	$ 2,519	$ 117,306	$ 327,132	$ 444,438
Total revenue	4,119 *(b)*	1,144	744	6,007	9,924	15,931
Income before income taxes	1,293	572	447	2,312	2,336	4,648
Net income	1,005	445	348	1,798	1,973	3,771
2020						
Total assets at period end *(a)*	$ 92,374 *(b)*	$ 28,416	$ 2,513	$ 123,303	$ 346,330	$ 469,633
Total revenue	3,964 *(b)*	1,168	698	5,830	9,978	15,808
Income before income taxes	1,549	607	437	2,593	1,875	4,468
Net income	1,179	462	332	1,973	1,653	3,626

(a) Total assets include long-lived assets, which are not considered by management to be significant in relation to total assets. Long-lived assets are primarily located in the U.S.
(b) Includes assets of approximately $31.7 billion, $37.9 billion and $38.1 billion and revenue of approximately $2.2 billion, $2.4 billion and $2.6 billion in 2022, 2021 and 2020, respectively, of international operations domiciled in the UK, which is 8%, 9% and 8% of total assets and 14%, 15% and 16% of total revenue, respectively.

Note 26–Supplemental information to the Consolidated Statement of Cash Flows

Non-cash investing and financing transactions that, appropriately, are not reflected in the consolidated statement of cash flows are listed below.

Non-cash investing and financing transactions	Year ended Dec. 31,		
(in millions)	**2022**	2021	2020
Transfers from loans to other assets for other real estate owned	**$ 1**	$ 1	$ 1
Change in assets of consolidated investment management funds	**253**	25	242
Change in liabilities of consolidated investment management funds	**2**	—	2
Change in nonredeemable noncontrolling interests of consolidated investment management funds	**189**	53	41
Securities purchased not settled	**22**	—	205
Securities matured not settled	**385**	—	—
Available-for-sale securities transferred to held-to-maturity	**6,067**	13,800	501
Premises and equipment/capitalized software funded by finance lease obligations	**—**	27	10
Premises and equipment/operating lease obligations	**307**	97	208
Investment redemptions not settled	**—**	—	9
Contingent consideration and residual interests from divestiture	**222**	—	—

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
The Bank of New York Mellon Corporation:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of The Bank of New York Mellon Corporation and subsidiaries (BNY Mellon) as of December 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, cash flows, and changes in equity for each of the years in the three-year period ended December 31, 2022, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of BNY Mellon as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the years in the three-year 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), BNY Mellon's internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 27, 2023 expressed an unqualified opinion on the effectiveness of BNY Mellon's internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of BNY Mellon's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to BNY Mellon 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 Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters 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 matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Quantitative component of BNY Mellon's pooled allowance for credit losses for loans and lending-related commitments related to higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate

As discussed in Notes 1 and 5 to the consolidated financial statements, BNY Mellon's allowance for credit losses for loans and lending-related commitments (ACL), is presented as a valuation allowance to loans and is recorded in other liabilities for lending-related commitments. At December 31, 2022, BNY Mellon had an allowance for loan losses of $176 million and an allowance for lending-related commitments of $78 million. BNY Mellon utilizes a quantitative methodology and qualitative framework for determining the ACL for loans and lending-related commitments that share similar risk characteristics (pooled allowance). In estimating the quantitative component, BNY Mellon uses models and methodologies that categorize financial assets based on product type, collateral type, and other credit trends and risk characteristics, including relevant information about past events, current conditions and reasonable and supportable forecasts of future economic conditions that affect the collectability of the recorded amounts. The quantitative component of the ACL for loans and lending-related commitments consists of the following three elements: (1) a pooled allowance for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate; (2) a pooled allowance for residential mortgage loans; and (3) an asset-specific allowance involving individually evaluated credits of $1 million or greater. In estimating the quantitative component of the pooled allowance for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate, BNY Mellon uses a methodology that applies the probability of default (PD) and loss given default (LGD) to the estimated facility amount at default. In order to capture the unique risks of the portfolios within the PD and LGD models, and the model used to estimate the facility amount at default, BNY Mellon segments the portfolio into major components based on risk characteristics of the loans and how risk is monitored. For each commercial and institutional credit, the expected loss considers the credit's risk rating. For each loan secured by commercial real estate, the expected loss considers collateral specific data and loan maturity, as well as commercial real estate market factors by geographical region and property type. The methodology incorporates a multi-scenario macroeconomic forecast of economic input variables over a reasonable and supportable forecast period spanning the life of the asset. The reasonable and supportable forecast period includes both an initial estimated economic outlook component as well as a reversion component for each economic input variable. A portion of the ACL is comprised of qualitative adjustments, based on various internal and external factors, intended to capture expected losses not reflected in the quantitative models but are likely to impact the measurement of estimated credit losses.

We identified the assessment of the quantitative component of the pooled allowance for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate as a critical audit matter. A high degree of audit effort, including specialized skills and knowledge, and subjective and complex auditor judgment was involved in the assessment of the pooled allowance for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate due to significant measurement uncertainty. Specifically, the assessment encompassed the evaluation of the methodology, including the methods and models used to estimate the PD and LGD, the macroeconomic forecast scenarios and related economic input variables and weighting of each scenario, the reasonable and supportable forecast period, and credit risk ratings for commercial and institutional credits. The

assessment also included an evaluation of the conceptual soundness and performance of the PD, LGD, and macroeconomic forecast models. In addition, auditor judgment was required to evaluate the sufficiency of audit evidence obtained.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to BNY Mellon's measurement of the quantitative component of the pooled allowance for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate, including controls related to the:

- development and approval of the ACL methodology
- development of certain PD and LGD models
- continued use and appropriateness of certain PD, LGD, and macroeconomic forecast models
- performance monitoring of the PD, LGD, and macroeconomic forecast models
- determination and measurement of the significant factors and assumptions used in the PD, LGD, and macroeconomic forecast models
- determination of the multi-scenario macroeconomic forecasts and their respective weights
- assessment of credit risk ratings
- computation, analysis, and approval of the ACL results, trends, and ratios.

We evaluated BNY Mellon's process to develop the quantitative component of the pooled allowance for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate by testing certain sources of data, factors, and assumptions that BNY Mellon used, and considered the relevance and reliability of such data, factors, and assumptions. In addition, we involved credit risk professionals with specialized skills and knowledge, who assisted in:

- evaluating quantitative component of the BNY Mellon's pooled allowance for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate for compliance with U.S. generally accepted accounting principles
- evaluating judgments made by BNY Mellon relative to the development and performance monitoring of the PD, LGD, and macroeconomic forecast models by comparing them to relevant company-specific metrics and trends and the applicable industry and regulatory practices
- assessing the conceptual soundness and performance testing of the PD, LGD, and macroeconomic forecast models by inspecting the model documentation to determine whether the models are suitable for their intended use
- testing the reasonable and supportable forecast period to evaluate the length of the period by comparing to specific portfolio risk characteristics and trends
- testing individual loan risk ratings for a selection of higher risk-rated and pass-rated commercial and institutional credits by evaluating the financial performance of the borrower, sources of repayment, and any relevant guarantees or underlying collateral.

We also assessed the sufficiency of the audit evidence obtained related to the quantitative component of the pooled allowance for higher risk-rated and pass-rated commercial and institutional credits and loans secured by commercial real estate by evaluating the:

- Cumulative results of the audit procedures
- Qualitative aspects of BNY Mellon's accounting practices
- Potential bias in the accounting estimate.

Identification and measurement of accruals for litigation and regulatory contingencies

As discussed in Note 22 to the consolidated financial statements, BNY Mellon establishes accruals for litigation and regulatory matters when those matters present loss contingencies that are both probable and reasonably estimable. BNY Mellon has disclosed that for those matters described where BNY Mellon is able to estimate reasonably possible losses, the aggregate range of such reasonably possible losses at December 31, 2022 is up to $520 million in excess of the accrued liability (if any) related to those matters.

We identified the assessment of the identification and measurement of BNY Mellon's accruals for litigation and regulatory contingencies as a critical audit matter. Due to the measurement uncertainty, subjective and complex auditor judgment was required to evaluate the sufficiency of audit evidence obtained. Specifically, this assessment included the evaluation of the subjective estimates used to determine the range of possible exposure and the probability of the predicted outcome based on the particular facts and circumstances at issue in each of the matters.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to BNY Mellon's process to identify, evaluate and measure accruals for litigation and regulatory contingencies and the reasonably possible losses. We performed inquiries of BNY Mellon to gain an understanding of any asserted or unasserted litigation, claims and assessments, and significant changes in individual accruals for litigation and regulatory contingencies. We performed inquiries of BNY Mellon's regulators and examined regulatory reports to gain an understanding of developments of regulatory activity and related matters that may result in the assessment of regulatory fines or penalties. We obtained and read letters received directly from BNY Mellon's internal legal counsel and a selection of external legal counsel that identified and described BNY Mellon's potential exposure to certain legal or regulatory proceedings. For cases that have settled, we performed back-testing analyses of BNY Mellon's litigation and regulatory contingency accruals recorded compared to amounts paid. We assessed the accrual for litigation and regulatory contingencies and evaluated the cumulative results of the procedures performed to assess the sufficiency of audit evidence obtained. We also evaluated the information included within the disclosures.

Assessment of the valuation of goodwill for the Investment Management reporting unit

As discussed in Notes 1 and 7 to the consolidated financial statements, the goodwill balance as of December 31, 2022 was $16.2 billion, of which $6.0 billion is allocated to the Investment Management reporting unit. BNY Mellon performs goodwill impairment testing on an annual basis and an interim test is performed when events or circumstances occur that may indicate that it is more likely than not that the fair value of any reporting unit may be less than its carrying value. This involves estimating the fair value of the reporting units using an income approach which discounts estimated future cash flows that incorporate various assumptions including a long-term growth rate.

We identified the assessment of the valuation of goodwill for the Investment Management reporting unit as a critical audit matter. A high degree of audit effort, including specialized skills and knowledge, and subjective and complex auditor judgment was involved in the evaluation of goodwill and determination of fair value for the Investment Management reporting unit due to significant measurement uncertainty relating

to specific assumptions used in the valuation. Specifically, these assumptions included the discount rate and the long-term growth rate.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to BNY Mellon's determination of the discount rate and long-term growth rate assumptions for the Investment Management reporting unit.

We evaluated the reasonableness of BNY Mellon's long-term growth rate for the Investment Management reporting unit, by comparing BNY Mellon's growth rates within historical revenue forecasts to actual results to assess BNY Mellon's ability to accurately forecast. In addition, we involved valuation professionals with specialized skills and knowledge, who assisted in:

- Assessing the reasonableness of the valuation approach including the discount rate and long-term growth rate assumptions used by BNY Mellon to calculate the fair value of the Investment Management reporting unit for compliance with U.S. generally accepted accounting principles
- Evaluating the discount rate by developing an independent assumption for the discount rate used in the valuation and comparing the inputs to the discount rate to publicly available data and assessing the resulting discount rate
- Testing the long-term growth rate by developing an independent range of appropriate long-term growth rates and comparing the long-term growth rate to publicly available data.

/s/ KPMG LLP

We have served as BNY Mellon's auditor since 2007.

New York, New York
February 27, 2023

Effective February 27, 2023

Directors

Linda Z. Cook
Chief Executive Officer and Board member of Harbour Energy Plc,

a global independent oil and gas company

Joseph J. Echevarria
Chair
The Bank of New York Mellon Corporation
Retired Chief Executive Officer of Deloitte LLP

a global provider of professional services

M. Amy Gilliland
President, General Dynamics Information Technology, a business unit of General Dynamics Corporation, a provider of technology networks and systems and professional services for U.S. defense, intelligence, federal agency, and state and local government customers

Jeffrey A. Goldstein
Senior Advisor and member of the Investment Committee, Canapi Ventures, a venture capital

fund; and Advisor Emeritus, Hellman &

Friedman LLC,
a private equity firm

K. Guru Gowrappan
Former Chief Executive Officer of Verizon Media Group, the media

division of Verizon Communications, Inc.

Ralph Izzo
Retired Chairman, President and Chief Executive Officer, Public Service Enterprise Group Incorporated, a diversified energy holding company

Sandra E. (Sandie) O'Connor
Retired Chief Regulatory Affairs Officer of JPMorgan Chase, a financial holding company

Elizabeth E. Robinson
Retired Global Treasurer of The Goldman Sachs Group, Inc.,

a global financial services company

Frederick O. Terrell
Senior Advisor at
Centerbridge Partners, LP,
a private investment management firm

Robin Vince
President and Chief Executive Officer,
The Bank of New York Mellon Corporation

Alfred W. (Al) Zollar
Executive Advisor at
Siris Capital Group, LLC,
a private equity firm

Executive Committee and Other Executive Officers

Jolen Anderson *

Global Head of Human Resources

Jennifer Barker
Chief Executive Officer, Treasury Services

James (Jim) T. Crowley
Chief Executive Officer, Pershing

Bridget E. Engle *

Chief Information Officer and Head of Engineering

Hani A. Kablawi *
Chairman of International

Catherine M. Keating *
Chief Executive Officer, Wealth Management

Jayee Koffey

Global Head of Enterprise Execution and Chief

Corporate Affairs Officer

Senthil Kumar *
Chief Risk Officer

Kurtis R. Kurimsky *
Corporate Controller

J. Kevin McCarthy *

General Counsel

Dermot McDonogh *
Chief Financial Officer

Alejandro Perez

Chief Administrative Officer

Emily Portney *
Chief Executive Officer, Asset Servicing

Roman Regelman *

Chief Executive Officer, Asset Servicing, Issuer

Services and Digital

Brian Ruane

Chief Executive Officer, Clearance and Collateral Management

Akash Shah *
Chief Growth Officer

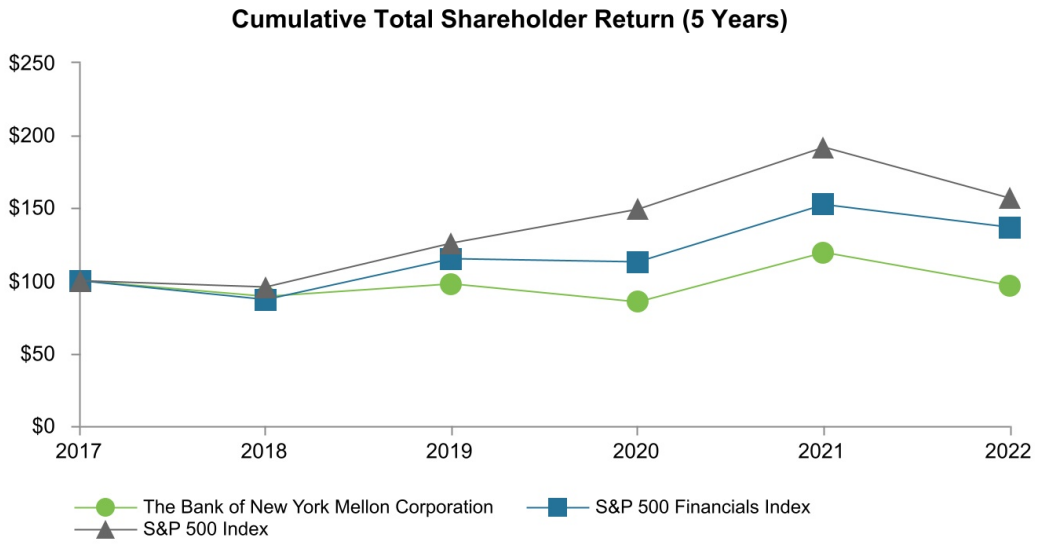
Hanneke Smits *
Chief Executive Officer, Investment Management

Robin Vince *
President and Chief Executive Officer

Adam Vos
Chief Executive Officer, Markets

* Designated as an Executive Officer.

Performance Graph



Cumulative shareholder returns	Dec. 31,					
(in dollars)	2017	2018	2019	2020	2021	**2022**
The Bank of New York Mellon Corporation	$ 100.0	$ 89.1	$ 97.6	$ 85.0	$ 119.5	**$ 96.6**
S&P 500 Financials Index *(a)*	100.0	87.0	114.9	113.0	152.5	**136.5**
S&P 500 Index *(a)*	100.0	95.6	125.7	148.9	191.6	**156.9**

(a) Returns are weighted by market capitalization at the beginning of the measurement period.

This graph shows The Bank of New York Mellon Corporation's cumulative total shareholder returns over the five-year period from Dec. 31, 2017 to Dec. 31, 2022. We utilize the S&P 500 Financials Index as a benchmark against our performance. The graph shows the cumulative total returns for the same five-year period of the S&P 500 Financials Index and the S&P 500 Index. The comparison assumes a $100 investment on Dec. 31, 2017 in The Bank of New York Mellon Corporation common stock, in the S&P 500 Financials Index and in the S&P 500 Index and assumes that all dividends were reinvested.

Exhibit 21.1

THE BANK OF NEW YORK MELLON CORPORATION
PRIMARY SUBSIDIARIES
DEC. 31, 2022

The following are primary subsidiaries of The Bank of New York Mellon Corporation as of Dec. 31, 2022 and the states or jurisdictions in which they are organized. The names of particular subsidiaries have been omitted because, considered in the aggregate as a single subsidiary, they would not constitute, as of Dec. 31, 2022, a "significant subsidiary" as that term is defined in Rule 1-02(w) of Regulation S-X under the Securities Exchange Act of 1934, as amended.

- BNY Capital Markets Holdings, Inc. – State of Incorporation: New York
- BNY International Financing Corporation – Incorporation: United States
- BNY Mellon Capital Markets, LLC – State of Organization: Delaware
- BNY Mellon Fund Management (Luxembourg) S.A. – Incorporation: Luxembourg
- BNY Mellon Fund Managers Limited – Incorporation: England
- BNY Mellon IHC, LLC – State of Organization: Delaware
- BNY Mellon International Asset Management Group Limited – Incorporation: England
- BNY Mellon International Asset Management (Holdings) Limited – Incorporation: England and Wales
- BNY Mellon Investment Adviser, Inc. (formerly The Dreyfus Corporation) – State of Incorporation: New York
- BNY Mellon Investment Management EMEA Limited – Incorporation: England
- BNY Mellon Investment Management Europe Holdings Limited – Incorporation: England
- BNY Mellon Investment Management (Jersey) Limited – Incorporation: Jersey
- BNY Mellon Investments Limited – Incorporation: England
- BNY Mellon, National Association – Incorporation: United States
- Insight Investment Management (Global) Limited – Incorporation: England
- Insight Investment Management (Europe) Limited (formerly Insight Investment Management (Ireland) Limited) – Incorporation: Ireland
- Insight Investment Management Limited – Incorporation: England
- MBC Investments Corporation – State of Incorporation: Delaware
- PAS Holdings LLC – State of Organization: Delaware
- Pershing Advisor Solutions LLC – State of Organization: Delaware
- Pershing Group LLC – State of Organization: Delaware
- Pershing Holdings (UK) Limited – Incorporation: England
- Pershing Limited – Incorporation: England
- Pershing LLC – State of Organization: Delaware
- Pershing Securities Limited – Incorporation: England
- The Bank of New York Mellon – State of Organization: New York
- The Bank of New York Mellon (International) Limited – Incorporation: England
- The Bank of New York Mellon SA/NV – Incorporation: Belgium
- The Bank of New York Mellon Trust Company, National Association – Incorporation: United States
- Walter Scott & Partners Limited – Incorporation: Scotland

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the registration statements, as amended:

Form	Registration Statement	Filer
S-8	333-267167	The Bank of New York Mellon Corporation
S-8	333-233308	The Bank of New York Mellon Corporation
S-8	333-198152	The Bank of New York Mellon Corporation
S-8	333-174342	The Bank of New York Mellon Corporation
S-8	333-171258	The Bank of New York Mellon Corporation
S-8	333-150324	The Bank of New York Mellon Corporation
S-8	333-150323	The Bank of New York Mellon Corporation
S-8	333-149473	The Bank of New York Mellon Corporation
S-8	333-144216	The Bank of New York Mellon Corporation
S-3	333-228787	The Bank of New York Mellon Corporation
S-3	333-261575	The Bank of New York Mellon Corporation

our reports dated February 27, 2023, with respect to the consolidated financial statements of The Bank of New York Mellon Corporation and the effectiveness of internal control over financial reporting.

/s/ KPMG LLP

New York, New York
February 27, 2023

Exhibit 24.1

POWER OF ATTORNEY

THE BANK OF NEW YORK MELLON CORPORATION

Know all men by these presents, that each person whose signature appears below constitutes and appoints J. Kevin McCarthy and James J. Killerlane III, and each of them, such person's true and lawful attorney-in-fact and agent, with full power of substitution and revocation, for such person and in such person's name, place and stead, in any and all capacities, to sign one or more Annual Reports on Form 10-K pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, for The Bank of New York Mellon Corporation (the "Corporation") for the year ended December 31, 2022, and any and all amendments thereto, and to file the same with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission and with the New York Stock Exchange, Inc., granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as such person might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents and each of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

This power of attorney shall be effective as of February 14, 2023 and shall continue in full force and effect until revoked by the undersigned in a writing filed with the secretary of the Corporation.

/s/ Linda Z. Cook
Linda Z. Cook, Director

/s/ Ralph Izzo
Ralph Izzo, Director

/s/ Joseph J. Echevarria
Joseph J. Echevarria, Director

/s/ Sandra E. O'Connor
Sandra E. O'Connor, Director

/s/ M. Amy Gilliland
M. Amy Gilliland, Director

/s/ Elizabeth E. Robinson
Elizabeth E. Robinson, Director

/s/ Jeffrey A. Goldstein
Jeffrey A. Goldstein, Director

/s/ Frederick O. Terrell
Frederick O. Terrell, Director

/s/ K. Guru Gowrappan
K. Guru Gowrappan, Director

/s/ Alfred W. Zollar
Alfred W. Zollar, Director

Exhibit 31.1

CERTIFICATION

I, Robin Vince, certify that:

1. I have reviewed this annual report on Form 10-K of The Bank of New York Mellon Corporation (the "registrant");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 27, 2023

/s/ Robin Vince

Name: Robin Vince
Title: Chief Executive Officer

Exhibit 31.2

CERTIFICATION

I, Dermot McDonogh, certify that:

1. I have reviewed this annual report on Form 10-K of The Bank of New York Mellon Corporation (the "registrant");

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 27, 2023

/s/ Dermot McDonogh

Name: Dermot McDonogh
Title: Chief Financial Officer

Exhibit 32.1

CERTIFICATION

Pursuant to 18 U.S.C. Section 1350, the undersigned officer of The Bank of New York Mellon Corporation ("BNY Mellon"), hereby certifies, to his knowledge, that BNY Mellon's Annual Report on Form 10-K for the year ended December 31, 2022 (the "Report") fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of BNY Mellon.

Dated: February 27, 2023

/s/ Robin Vince

Name: Robin Vince
Title: Chief Executive Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.

Exhibit 32.2

CERTIFICATION

Pursuant to 18 U.S.C. Section 1350, the undersigned officer of The Bank of New York Mellon Corporation ("BNY Mellon"), hereby certifies, to his knowledge, that BNY Mellon's Annual Report on Form 10-K for the year ended December 31, 2022 (the "Report") fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of BNY Mellon.

Dated: February 27, 2023

/s/ Dermot McDonogh

Name: Dermot McDonogh

Title: Chief Financial Officer

The foregoing certification is being furnished solely pursuant to 18 U.S.C. Section 1350 and is not being filed as part of the Report or as a separate disclosure document.