

Northern Trust

Mid-Cycle Company-Run Stress Test Results

Dodd-Frank Act Stress Test Disclosure

BHC-Designed Severely Adverse Scenario

October 31, 2019



Introduction

Northern Trust Corporation (the Corporation) is a financial holding company that is a leading provider of asset servicing, fund administration, asset management, fiduciary and banking solutions for corporations, institutions, families and individuals worldwide. The Corporation conducts business through various U.S. and non-U.S. subsidiaries, with a network of offices in 21 U.S. states, Washington, D.C., and 23 locations in Canada, Europe, the Middle East, and the Asia-Pacific region. The Corporation's principal subsidiary, The Northern Trust Company (the Bank), was founded in 1889 and represents nearly 100% of the Corporation's consolidated assets. As used in the remainder of this document, except where the context otherwise requires, the terms "Corporation" and "Bank" shall include the subsidiaries of such entities on a consolidated basis.

The Corporation and the Bank are required to conduct company-run stress tests and disclose a summary of those results pursuant to the requirements of 12 CFR Part 252 (the Regulation). Accordingly, management has developed the following disclosure, which contains the information required by the Regulation to be disclosed publicly. Any differences in the presentation of information concerning either the Corporation or the Bank contained herein relative to how such information is presented for other purposes is solely due to efforts to comply with the Regulation. The information presented herein does not, in any way, reflect changes to the business plans, practices, or strategy of either the Corporation or the Bank. The projections contained herein are based on the severely adverse scenario developed by the Corporation (BHC-Designed Severely Adverse Scenario) and assumptions required by the Regulation. Accordingly, these projections represent (1) hypothetical estimates that involve an economic outcome more adverse than expected, and (2) are not projections of expected pre-provision net revenue (PPNR), losses, net income before taxes or capital ratios.

The Regulation requires the Corporation and the Bank to include, among other things, certain assumptions with respect to capital actions (Dodd-Frank Act Capital Actions) including for each of the second through ninth quarters of the assessment horizon: common stock dividends equal to the quarterly average dollar amount of common stock dividends that the Corporation paid in the previous year; payments on any other instrument eligible for inclusion in the numerator of a regulatory capital ratio equal to the stated dividend, interest, or principal due on such instrument during the quarter; and no redemption or repurchase of any capital instrument eligible for inclusion in the numerator of a regulatory capital ratio.

Risks Included in the Stress Test

When conducting the company-run stress test under the BHC-Designed Severely Adverse Scenario with Dodd-Frank Act Capital Actions, the Corporation evaluated and incorporated the principal risks which impact this assessment. These risks include credit risk, operational risk, market risk and strategic risk.

Credit risk is the risk to interest income or principal from the failure of a borrower or counterparty to perform on an obligation. Credit risk is inherent in many of the Corporation's activities. A significant component of credit risk relates to loans, leases, securities and counterparty-related exposures. In addition, credit risk is inherent in certain contractual obligations such as legally binding commitments to extend credit, commercial letters of credit and standby letters of credit.

Operational risk is the risk of loss from inadequate or failed internal processes, human factors and systems, or from external events. Operational risk is inherent in each of the Corporation's businesses and corporate functions and reflects the potential for inadequate information systems, operating problems, product design and delivery difficulties, potential legal actions, or catastrophes to result in losses. This includes the potential that continuity of service and resiliency may be impacted. Operational risk also includes fiduciary, compliance and legal risks, which under the Corporation's risk structure are governed and managed explicitly.

Market risk refers to interest rate risk and trading risk. Interest rate risk is the potential for movements in interest rates to cause changes in net interest income and the market value of equity. Changes in interest rates can have a positive or negative impact on net interest income depending on the positioning of assets, liabilities, and off-balance-sheet instruments. Trading risk is the potential for movements in market variables such as foreign exchange and interest rates to cause changes in the value of trading positions. The Corporation is exposed to trading risk primarily through foreign exchange trading.

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

Macroeconomic and geopolitical risk centers on events or themes that would have a significant, detrimental impact on financial markets, and by extension, financial services firms. Episodes of this kind would tend to have general, as opposed to idiosyncratic, consequences. Business risk arises from internal, secular, competitive, and/or regulatory changes. Reputation risk is a residual

risk that arises from negative perception on the part of clients, counterparties, stockholders, investors, debt holders, market analysts, regulators, staff, or other relevant parties that adversely affects Northern Trust's ability to conduct its businesses.

Methodologies Used in the Stress Test

The Corporation uses a series of models and estimation techniques that translate the economic and financial variables in the BHC-Designed Severely Adverse Scenario to project PPNR, provision for loan and lease losses, and net income before taxes. General descriptions of the methodologies used in the company-run stress test under the BHC-Designed Severely Adverse Scenario are described below.

The Corporation's PPNR is comprised of trust, investment and other servicing fees, other noninterest income, net interest income, and noninterest expense, including operational losses. Trust, investment and other servicing fees are projected from models and management-derived projections that are based on relationships with macroeconomic indicators, such as equity indices, gross domestic product (GDP) and interest rates.

In a process similar to that used to project trust, investment and other servicing fees, the Corporation utilizes various models and management-derived approaches to project levels of certain on- and off-balance-sheet items, primarily loans and deposits. For balance sheet items such as investment securities, money market assets and borrowed funds, all of which are influenced by projected levels of deposits and loans, management-derived projections are used to estimate levels across the assessment horizon. Having determined projections of on- and off-balance-sheet exposures, the Corporation utilizes its asset liability modeling to project net interest income and accumulated other comprehensive income on the available for sale (AFS) securities portfolio for the scenario. Additionally, the Corporation utilizes this exposure information to calculate credit risk-weighted assets under the Basel III Standardized regime, and to this amount adds risk-weighted assets related to its market risk.

Other noninterest income consists of foreign exchange trading income, treasury management fees, securities commissions and trading income, and other operating income. All of these items are based on management-derived projections, which are informed by analysis of historical trends and the Corporation's current and projected business mix.

The Corporation projects noninterest expense through a comprehensive analysis of projections that are based on management's assessment of the macroeconomic scenario, business strategies, competitive dynamics, historical relationships and experience. Primary expense categories are compensation and benefits, equipment and software, and outside services.

Using the macroeconomic factor projections for the scenario, the Corporation estimates the impact on the frequency of operational losses across the assessment horizon. The Corporation projects operational losses for certain material risks by combining frequency projections with the average loss severity. Losses for the remaining material risks are estimated using operational risk scenarios developed by the Corporation. These operational risk scenarios also capture idiosyncratic risks specific to the Corporation. Management reviews the operational loss results for all material risks for reasonableness given the conditions of the scenario, and as a result of this review, management judgment may be applied to adjust the operational loss results.

The Corporation projects credit losses under stressed economic conditions by utilizing models and related qualitative estimation approaches that consider relationships between macroeconomic indicators and portfolio characteristics including obligor and loan level attributes. Management utilizes these segment-specific approaches to calculate probability of default and loss given default parameters over the scenario's assessment horizon. Segment level expected losses are aggregated and utilized to project non-performing loans, charge-offs, and the reserve and provision for credit losses for each scenario.

Statistical models and management-derived projections are used to project other-than-temporary impairment (OTTI) for held to maturity (HTM) and AFS securities held within the investment securities portfolio. The approaches use cash flow models that compare a discounted present value to book value, taking into account prepayment, default, and loss severities based on macroeconomic variables and loan-specific factors. Additionally, credit-migration-related methodologies are utilized to calculate an impairment charge based upon the probability of impairment.

Description of BHC-Designed Severely Adverse Scenario

For the 2019 Mid-Cycle BHC-Designed Severely Adverse Scenario, the Corporation selected a scenario designed to capture the idiosyncratic risks inherent in the Corporation's business model, and included both macroeconomic and firm-specific events that impact the Corporation's business activities and risk exposures.

The BHC-Designed Severely Adverse scenario arises from severe trade frictions that impair the global flow of goods and capital. China is the focal point of these frictions, and sees its rate of economic growth diminished substantially from recent levels. The slower pace creates significant credit stress and financial instability in China.

The contraction of the global trading system produces a corresponding contraction in economic activity across major world markets. Financial markets react promptly and negatively to escalating trade tension. A substantial correction in equity markets occurs, on the expectation that large-capitalization companies will be forced to curtail global sourcing and distribution.

These factors lead to a recession in the United States that is deeper than the one experienced in the 2008-2009 Great Recession. Inflation is the subject of countervailing forces: downward pressure produced by economic contraction, but upward pressure as trade restrictions raise the cost of imports. House prices correct significantly, and unemployment more than doubles. Only a modest improvement is seen in subsequent years, despite the implementation of a fiscal stimulus package that is close to the size seen during the Great Recession.

The impact on the United Kingdom is especially acute, as a “no deal” Brexit produces multiple adverse consequences. With all of this bearing down, the United Kingdom experiences a recession that lasts through 2020. The Eurozone is also affected negatively, but less severely. The threat of deflation is present in the Eurozone as it endures very low levels of inflation through 2020, keeping central bank interest rates very low. Populism gathers further force, and European Union members successfully press for fiscal expansion.

Key macroeconomic indicators include:

	3Q19	4Q19	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	3Q21
U.S. Real GDP (Annualized, %)	(2.8)	(6.1)	(6.4)	(5.3)	(4.1)	(1.3)	0.9	1.5	1.8
Eurozone GDP (Annualized, %)	(1.8)	(5.0)	(5.5)	(4.2)	(3.0)	(0.7)	0.5	1.1	1.2
U.S. Unemployment Rate (%)	5.5	6.3	7.4	8.0	8.8	9.2	9.7	10.0	9.7
S&P 500 (end of period)	2,059	1,647	1,400	1,260	1,197	1,257	1,320	1,426	1,568
10-year U.S. Treasury note (%)	1.5	1.0	0.7	0.5	0.5	0.5	0.6	0.8	1.0
3-month USD LIBOR (%)	2.4	1.9	1.2	0.7	0.6	0.6	0.5	0.5	0.4
U.S. Housing Price Index (YoY%)	(5.3)	(12.8)	(16.2)	(17.9)	(15.9)	(10.1)	(5.9)	(3.9)	1.9
EAFE (local value, end of period)	752	587	490	436	414	437	460	500	553
Market Volatility (VIX) - (quarterly average, %)	56	43	33	26	24	23	23	23	22

In addition to a worsening of economic conditions, this scenario includes three hypothetical idiosyncratic events that impact the Corporation. These include an unexpected credit default and two operational risk related events.

Summary of Results for Northern Trust Corporation’s Company-Run Mid-Cycle Stress Test under the BHC-Designed Severely Adverse Scenario

As a result of these macroeconomic assumptions, the Corporation’s balance sheet is projected to shrink initially, before beginning to grow again in the sixth projection quarter. Overall deposit levels decrease initially, and the decline in funding leads to lower levels of securities throughout the assessment horizon. Additionally, the credit quality of residential, commercial real estate and commercial lending is projected to deteriorate as macroeconomic conditions worsen, causing credit losses to rise and remain elevated across the assessment horizon.

Total revenues are projected to decline across the assessment horizon before beginning to recover modestly near the end of the horizon. Trust, investment and other servicing fees are projected to decline due to falling equity markets and GDP levels, before recovering in the sixth projection quarter. Net interest income is projected to decline over a majority of the assessment horizon as a result of a shrinking balance sheet and low net interest margins. Consequently, a net loss is realized in the first projection quarter, and net income remains suppressed for the remainder of the assessment horizon.

The Corporation’s Common Equity Tier 1, Tier 1, and Total Risk-Based Capital ratios are projected to decline modestly by the end of the assessment horizon, driven by Dodd-Frank Act Capital Actions and suppressed net income. Leverage ratios show a moderate increase, driven by declines in deposits. Despite these conditions, the Corporation’s capital ratios remain above regulatory minimums and Capital Management Goals throughout the assessment horizon.

Northern Trust Corporation’s Projected Stressed Capital Ratios through Q3 2021 under the BHC-Designed Severely Adverse Scenario			
	Actual Q2 2019	Stressed Capital Ratios	
		Q3 2021	Minimum over Assessment Horizon
Common Equity Tier 1 Capital Ratio	13.2%	12.3%	12.2%
Tier 1 Risk-Based Capital Ratio	14.5%	13.7%	13.6%
Total Risk-Based Capital Ratio	16.4%	15.7%	15.7%
Tier 1 Leverage Ratio	8.6%	9.1%	9.0%
Supplementary Leverage Ratio	7.6%	7.8%	7.8%

Northern Trust Corporation's Projected Losses, Revenue, and Net Income Before Taxes for Q3 2019 through Q3 2021 under the BHC-Designed Severely Adverse Scenario

	Billions of Dollars	Percent of Average Assets
Pre-Provision Net Revenue	\$1.2	1.3%
Other Revenue	\$0.0	0.0%
<i>less</i>		
Provisions	\$0.8	0.9%
Realized Losses/Gains on Securities	\$0.2	0.2%
Trading and Counterparty Losses	\$0.0	0.0%
Other Losses/Gains	\$0.0	0.0%
<i>equals</i>		
Net Income Before Taxes	\$0.2	0.2%

Northern Trust Corporation's Projected Loan Losses by Type of Loans for Q3 2019 through Q3 2021 under the BHC-Designed Severely Adverse Scenario

	Billions of Dollars	Portfolio Loss Rates ⁽¹⁾
Loan Losses	\$0.7	2.3%
First-Lien Mortgages, Domestic	\$0.0	0.8%
Jr Liens and HELOCs, Domestic	\$0.0	0.7%
Commercial and Industrial	\$0.3	6.0%
Commercial Real Estate, Domestic	\$0.2	4.5%
Credit Cards	\$0.0	0.0%
Other Consumer	\$0.0	1.2%
Other Loans	\$0.3	1.4%

(1) Portfolio loss rates estimated as percent of average portfolio balance

Summary of Results for The Northern Trust Company’s Company-Run Mid-Cycle Stress Test under the BHC-Designed Severely Adverse Scenario

When conducting the company-run stress test, the Bank evaluated the types of risks and utilized the same methodologies as described above in the discussion concerning the Corporation, as the Bank represents nearly 100% of the consolidated assets of the Corporation and its business mix and processes are virtually identical to those of the Corporation.

Similar to the Corporation, the Bank’s Common Equity Tier 1, Tier 1, and Total Risk-Based Capital ratios are projected to decline in the initial quarters of the assessment horizon, but unlike the Corporation recover due to risk weighted asset reductions and capital conservation at the Bank, and show moderate increases by the end of the horizon. Leverage ratios show a moderate increase.

The Northern Trust Company’s Projected Stressed Capital Ratios through Q3 2021 under the BHC-Designed Severely Adverse Scenario			
	Actual Q2 2019	Stressed Capital Ratios	
		Q3 2021	Minimum over Assessment Horizon
Common Equity Tier 1 Capital Ratio	13.4%	13.6%	12.3%
Tier 1 Risk-Based Capital Ratio	13.4%	13.6%	12.3%
Total Risk-Based Capital Ratio	15.1%	15.4%	15.0%
Tier 1 Leverage Ratio	7.8%	8.9%	8.2%
Supplementary Leverage Ratio	6.9%	7.6%	7.2%

FORWARD-LOOKING STATEMENTS

This document contains “forward-looking statements” within the meaning of the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are identified typically by words or phrases such as “believe,” “expect,” “anticipate,” “intend,” “estimate,” “project,” “likely,” “plan,” “goal,” “target,” “strategy,” and similar expressions or future or conditional verbs such as “may,” “will,” “should,” “would,” and “could.” Forward-looking statements contained herein include certain projections of our financial results and condition and capital ratios under a hypothetical stress scenario that incorporates a set of assumed economic and financial conditions. The projections are not intended to be a forecast of expected future economic or financial conditions or a forecast of the Corporation’s or the Bank’s expected future financial results or condition, but rather reflect possible results under the hypothetical scenario. Our future financial results and conditions will be influenced by actual economic and financial conditions and other factors described in the Corporation’s reports filed with the U.S. Securities and Exchange Commission, including its Annual Report on Form 10-K for the year ended December 31, 2018, all of which are available on our website. The Corporation assumes no obligation to update its forward-looking statements.