

Morgan Stanley



# **2019 Mid-Cycle Dodd-Frank Act Stress Test (DFAST)**

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## **A** Disclaimer

The results summarized in section D herein contain forward-looking projections that represent estimates based on the hypothetical, severely adverse economic scenario as described in section C. The estimates also reflect certain required assumptions regarding Morgan Stanley's (the "Firm's") capital actions, which are described in section B. The quantitative outputs and qualitative discussion herein should not be viewed as forecasts of expected outcomes or capital ratios or as a measure of the solvency or actual financial performance or condition of the Firm. Instead, the outputs and discussions are estimates from forward-looking exercises that consider possible outcomes based on hypothetical, highly adverse economic scenarios.

The outputs of the analyses and the discussion contained herein may not align with those produced by other financial institutions conducting similar exercises, even if similar hypothetical stress scenarios were used, due to differences in methodologies and assumptions used to produce those outputs. In addition, the results contained herein may not be comparable to results of prior stress tests conducted by the Firm, the Federal Reserve or other financial institutions due to the evolving regulatory framework, evolving macro economic and market environment and other factors.

## **B Requirements for Mid-Cycle Dodd-Frank Act Stress Test**

- In October 2014, the Federal Reserve issued a final rule to modify the regulations for capital planning and stress testing contained in the existing capital plan and stress testing rules. As amended, this final rule sets forth the Supervisory and Company-Run Stress Test Requirements for certain large Bank Holding Companies (“BHCs,” each such BHC, a “Covered Company”), including the Firm.
- The rule requires Covered Companies to disclose publicly the results of their Mid-Cycle Stress Test under the Severely Adverse stress scenario, which describes the hypothetical evolution of certain specific macroeconomic and market variables consistent with a severely adverse recession.
- The planning horizon begins with actual results as of June 30, 2019 and includes a nine quarter forecast beginning with the third quarter of 2019 and ending with the third quarter of 2021.
- The Firm is required to employ the following assumptions (the “Dodd-Frank Act Stress Testing Capital Actions”) regarding its projected capital actions beginning with the second quarter of the nine-quarter forecast horizon:
  - Payment of common dividends equal to the quarterly average dollar amount of common stock dividends paid over the past four quarters;
  - 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;
  - No redemption or repurchase of any capital instrument eligible for inclusion in the numerator of a regulatory capital ratio; and
  - No issuances of common stock or preferred stock, except for issuances related to expensed employee compensation or in connection with a planned merger or acquisition.
- The results of the Firm’s stress test, under the Firm’s Internally Developed Severely Adverse Stress Scenario assuming the Dodd-Frank Act Stress Testing Capital Actions, are documented under section D “Morgan Stanley’s Dodd-Frank Act Stress Test Results” included herein.

## © Description of Morgan Stanley's Internally Developed Severely Adverse Scenario

- The Firm's internally developed severely adverse stress scenario ("Morgan Stanley's Internally Developed Severely Adverse Scenario") is characterized by corporate defaults coupled with escalation of trade barriers which lead to a US credit crisis with global ramifications. The crisis spreads to China and other highly-leveraged EMs, leading to EM currency depreciation and rising defaults. Developed markets are impacted by further escalation of trade barriers. Specifically, Morgan Stanley's Internally Developed Severely Adverse Scenario reflects a collapse of credit markets, declines in equity markets, and a significant deterioration in the macroeconomic environment. Morgan Stanley's Internally Developed Severely Adverse Scenario stresses several key macroeconomic and market variables including but not limited to those discussed herein.
  - U.S. and Eurozone Real GDP Annualized QoQ% growth rates are projected to be negative 6.2% and negative 7.6% at the trough, respectively, compared with the historical annual growth rates of 1 - 2%.
  - Equity market indices experience a sharp decline during the first year of the forecast horizon – The S&P 500 Index drops 52% from peak to trough, this leads to a surge in equity market volatility as the VIX peaks at 52. Additionally, WTI crude oil price declines to \$27 per barrel by 2Q 2020.
  - Both equity and commodity prices begin to recover during the later quarters of the forecast horizon, but remain below their starting points at the end of the forecast horizon in 3Q 2021.
  - Fed Funds rate remains low at 18 bps throughout the later quarters of the forecast horizon. Additionally, BBB credit spreads widen to 600 bps at the peak in 1Q 2020 and recover to about 302 bps by 3Q 2021.
  - Morgan Stanley's Internally Developed Severely Adverse Scenario also includes an upfront market shock (reflecting large instantaneous price declines across credit, equity, securitized products and commodities), the default of a large counterparty, and Firm-specific idiosyncratic events.

## D Morgan Stanley's Dodd-Frank Act Stress Test Results (1 of 6)

### Capital Ratios and Risk-Weighted Assets, Actual 2Q 2019 and Projected 3Q 2019 – 3Q 2021, under Morgan Stanley's Internally Developed Severely Adverse Scenario

Regulatory Ratio	Actual 2Q 2019	Projected Stressed Capital Ratios <sup>(1) (2) (3)</sup>		Regulatory Minimum
		Ending	Minimum	
Common Equity Tier 1 Capital Ratio	16.3%	11.8%	10.7%	4.5%
Tier 1 Risk-Based Capital Ratio	18.6%	14.0%	12.9%	6.0%
Total Risk-Based Capital Ratio	21.0%	16.1%	15.4%	8.0%
Tier 1 Leverage Ratio	8.4%	7.2%	6.3%	4.0%
Supplementary Leverage Ratio	6.5%	5.6%	5.0%	3.0%

(\$Bn)	Actual 2Q 2019	Projected 3Q 2021
Risk-Weighted Assets <sup>(4)</sup>	\$392	\$399
Average Adjusted Assets	\$868	\$773

1. The capital ratios are calculated based on the Dodd-Frank Act Stress Testing Capital Actions described on page 4. These projections represent hypothetical estimates that involve an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses, revenues, net income before taxes, or capital ratios. The minimum capital ratios do not necessarily occur in the same quarter of the planning horizon.
2. With respect to the Common Equity Tier 1, Tier 1 and Total Risk-based Capital ratios, the U.S. Basel III standardized approach is used to calculate RWAs for credit risk and market risk.
3. The most significant cause of reduction in capital ratios under Morgan Stanley's Internally Developed Severely Adverse Scenario resulted from trading and counterparty losses that were modelled to occur in the first quarter of the forecast horizon. Ending capital ratios under Morgan Stanley's Internally Developed Severely Adverse Scenario reflected the ongoing accretion of earnings, net of operational risk and credit losses, as well as the level of assets and RWAs projected through the forecast horizon.
4. Actual and projected RWAs are calculated using the Basel III Standardized approach.

## D Morgan Stanley's Dodd-Frank Act Stress Test Results (2 of 6)

### Projected Losses, Revenues, and Net Income before Taxes through 3Q 2021 under Morgan Stanley's Internally Developed Severely Adverse Scenario

Item	Billions of Dollars	Percent of Average Assets <sup>(1)</sup>
Pre-Provision Net Revenue	\$8.9	1.1%
Other Revenue <sup>(2)</sup>	N/A	
<i>Less</i>		
Provisions	\$3.5	
Realized Losses/Gains on Securities (AFS / HTM) <sup>(3)</sup>	\$0.0	
Trading and Counterparty Losses <sup>(4)</sup>	\$14.3	
Other Losses/Gains <sup>(5)</sup>	\$5.3	
<i>Equals</i>		
<b>Net Income before Taxes</b>	<b>(\$14.2)</b>	<b>(1.8)%</b>
<b>Memo Items</b>		
Other Comprehensive Income <sup>(6)</sup>	\$0.7	
<i>Other Effects on Capital</i>		
	2Q 2019	3Q 2021
AOCI Included in Capital (in Billion Dollars) <sup>(7)</sup>	(\$2.1)	(\$1.4)

1. Average assets reflect the nine-quarter average of total assets.
2. Other revenue includes one-time income and (expense) items not included in pre-provision net revenue.
3. Represents available-for-sale ("AFS") securities and held-to-maturity ("HTM") securities.
4. Trading and counterparty losses include mark-to-market and credit valuation adjustments ("CVA") losses and losses arising from the counterparty default component scenario applied to derivatives and securities lending, and repurchase agreement activities.
5. Other losses/gains include projected change in value of loans held for sale and loans measured under the fair-value option.
6. Represents the change over the forecast horizon. Other comprehensive income primarily includes incremental unrealized losses/gains on AFS securities, defined benefit pension plan and projected changes in the Cumulative Translation Adjustment.
7. Represents the inception-to-date balance of other comprehensive income as of 2Q 2019 and 3Q 2021.

## D Morgan Stanley's Dodd-Frank Act Stress Test Results (3 of 6)

### Projected Loan Losses, by Type of Loan 3Q 2019 – 3Q 2021 under Morgan Stanley's Internally Developed Severely Adverse Scenario

Loan Type	Billions of Dollars <sup>(1)</sup>	Portfolio Loss Rates (Percent)
First-Lien Mortgages, Domestic	\$0.4	1.6%
Junior Liens and HELOCs, Domestic	\$0.0	4.7%
Commercial and Industrial	\$1.0	8.4%
Commercial Real Estate, Domestic	\$0.5	5.2%
Credit Cards	N/A	N/A
Other Consumer	\$0.0	0.2%
Other Loans <sup>(2)</sup>	\$0.6	1.1%
<b>Total Projected Loan Losses</b>	<b>\$2.6</b>	<b>2.1%</b>

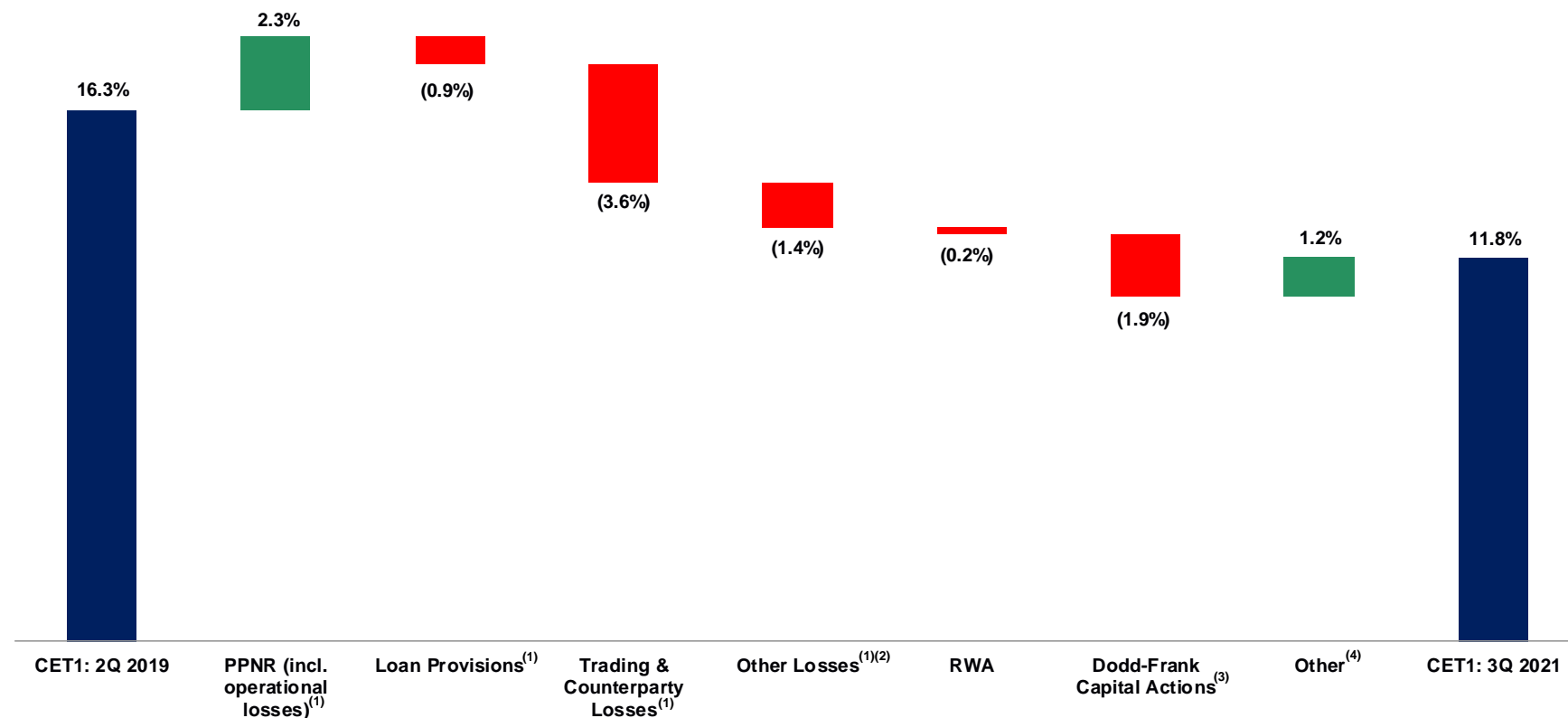
1. Average loan balances used to calculate portfolio loss rates exclude loans held for sale and loans measured at fair value and are calculated over nine quarters. Portfolio loss rates represent cumulative portfolio losses as a percentage of the average loan portfolio balance.

2. Other loans include loans to depositories and other financial institutions and loans for purchasing or carrying securities.



## D Morgan Stanley's Dodd-Frank Act Stress Test Results (4 of 6)

### Key Drivers of Common Equity Tier 1 Capital Ratio ("CET 1") under Morgan Stanley's Internally Developed Severely Adverse Scenario



1. Reflects pre-tax impact.

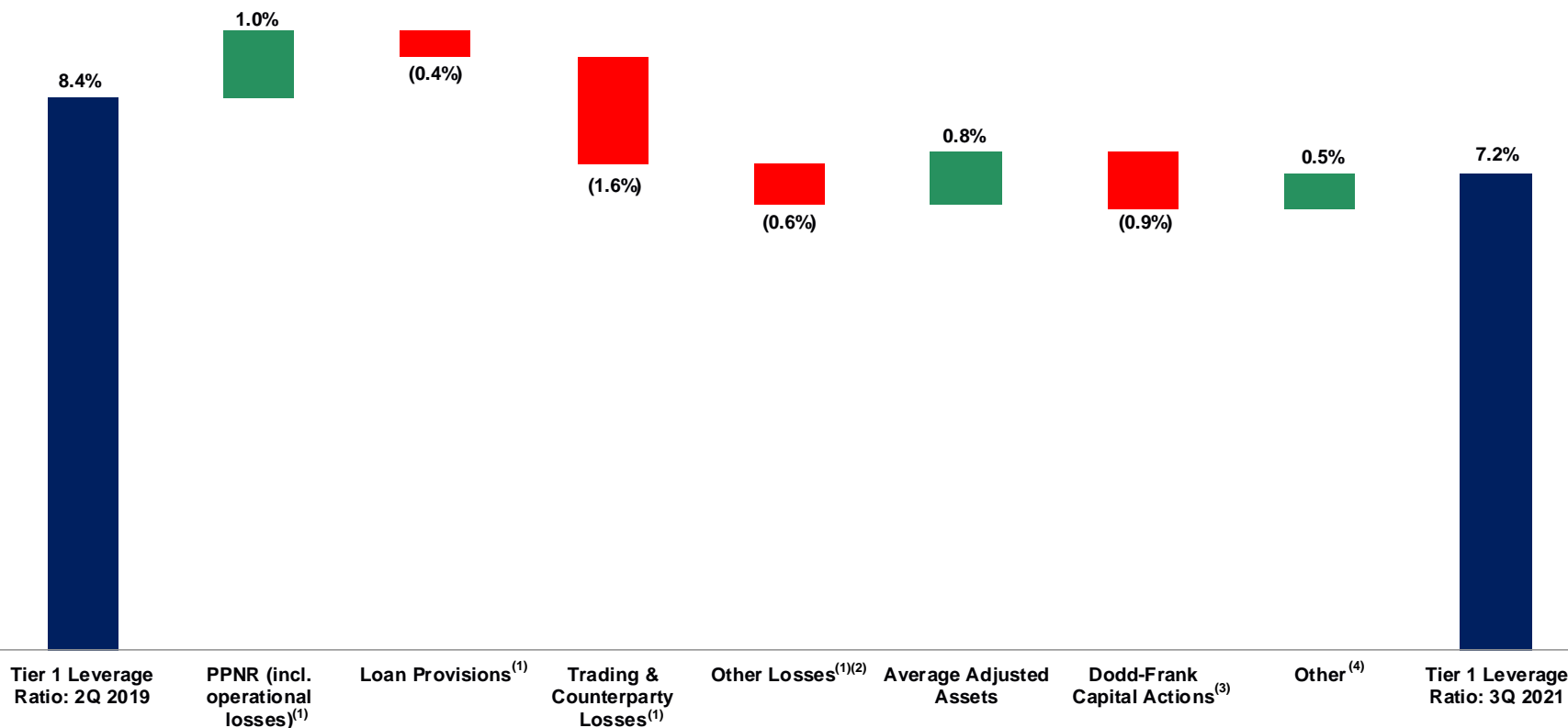
2. Other losses/gains include projected change in value of loans held for sale and loans measured under the fair-value option.

3. Reflects share repurchases and cash dividends declared on common stock and preferred stock in accordance with the assumptions prescribed in the Dodd Frank Act Stress Testing Capital Actions, which are discussed on page 4.

4. Other includes changes in Common Equity Tier 1 deductions over the forecast horizon, employee incentive plan share issuance, AOCI, tax provisions, realized gains/losses on AFS / HTM Securities, and Earnings Attributable to Non-Controlling Interests.

## D Morgan Stanley's Dodd-Frank Act Stress Test Results (5 of 6)

### Key Drivers of Tier 1 Leverage Ratio under Morgan Stanley's Internally Developed Severely Adverse Scenario



1. Reflects pre-tax impact.

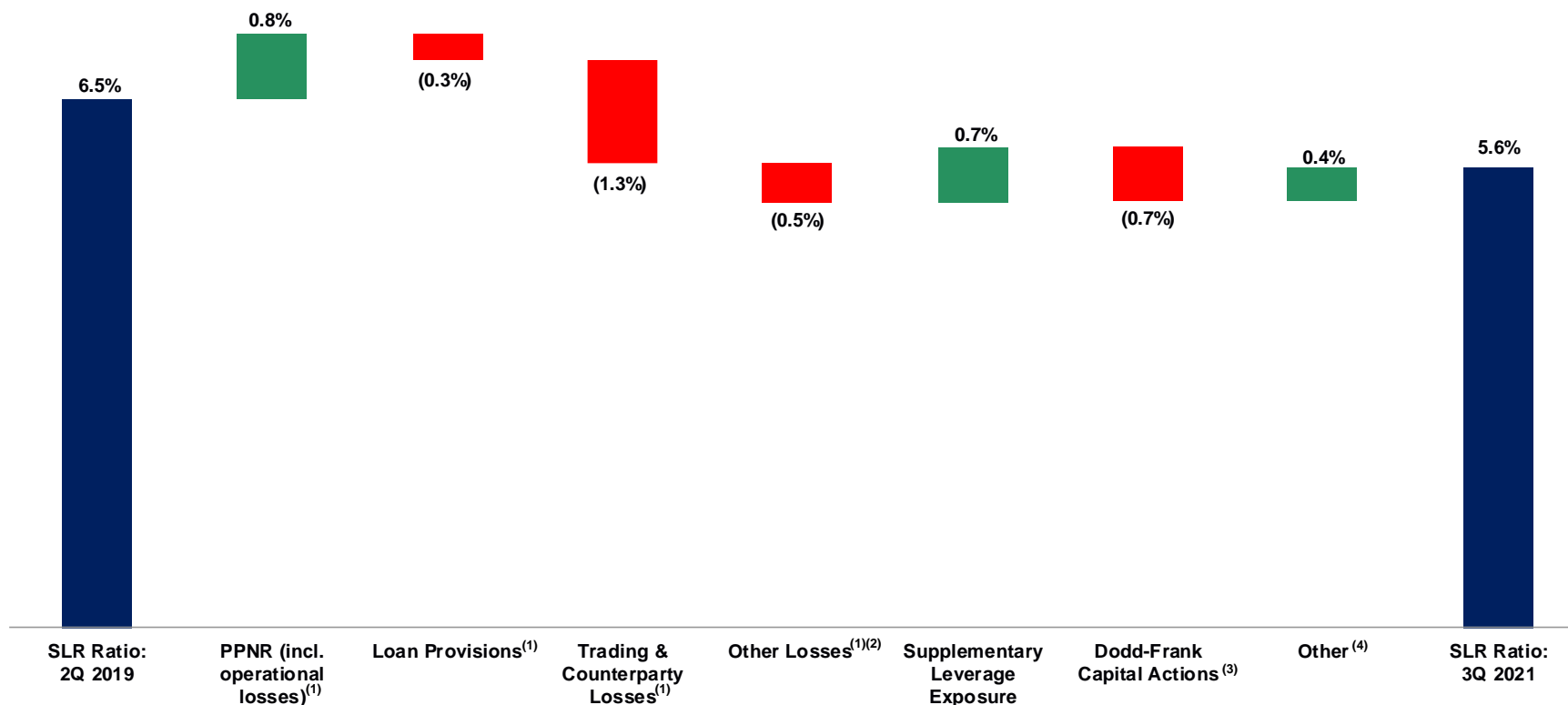
2. Other losses/gains include projected change in value of loans held for sale and loans measured under the fair-value option.

3. Reflects share repurchases and cash dividends declared on common stock and preferred stock in accordance with the assumptions prescribed in the Dodd Frank Act Stress Testing Capital Actions, which are discussed on page 4.

4. Other includes changes in Tier 1 Capital deductions over the forecast horizon, employee incentive plan share issuance, AOCI, tax provisions, realized gains/losses on AFS / HTM Securities, and Earnings Attributable to Non-Controlling Interests.

## D Morgan Stanley's Dodd-Frank Act Stress Test Results (6 of 6)

### Key Drivers of Supplementary Leverage Ratio under Morgan Stanley's Internally Developed Severely Adverse Scenario



1. Reflects pre-tax impact.
2. Other losses/gains include projected change in value of loans held for sale and loans measured under the fair-value option.
3. Reflects share repurchases and cash dividends declared on common stock and preferred stock in accordance with the assumptions prescribed in the Dodd Frank Act Stress Testing Capital Actions, which are discussed on page 4.
4. Other includes changes in Tier 1 Capital deductions over the forecast horizon, employee incentive plan share issuance, AOCI, tax provisions, realized gains/losses on AFS / HTM Securities, and Earnings Attributable to Non-Controlling Interests.

## **E** Key Risks Captured in Dodd-Frank Act Stress Test (1 of 2)

The below risks are those inherent in the Firm's business activities and included in the internally developed severely adverse scenario.

### **Credit Risk**

Risk of loss arising when a borrower, counterparty or issuer does not meet its financial obligations to the Firm. This risk arises from a variety of business activities, including but not limited to lending commitments, over-the-counter derivatives, securities financing transactions, listed derivatives, and prime brokerage margin lending.

### **Market Risk**

Risk caused by a change in the level of one or more market prices, volatilities, correlations or other market factors, such as market liquidity, which will result in losses for a position or portfolio owned by the Firm. Market risks impacting the Firm include the level and volatility of equity prices, debt and commodity prices, interest rates, currency values and other market indices.

### **Liquidity Risk**

Risk that the Firm will be unable to finance its operations due to a loss of access to the capital markets or difficulty in liquidating its assets. Liquidity risk also encompasses the Firm's ability (or perceived ability) to meet its financial obligations without experiencing significant business disruption or reputational damage that may threaten its viability as a going concern.

## Key Risks Captured in Dodd-Frank Act Stress Test (2 of 2)

<b>Earnings at Risk</b>	Risks to baseline earnings that can arise from stressed macroeconomic conditions, departure of key revenue generators, significant loss of customer base, reduced standing amongst competitors, idiosyncratic or industrywide factors, significant changes to expected expenses and shifting of business/product mix.
<b>Reputation Risk</b>	Risk of baseline earnings degradation due to change in the Firm's perception in the marketplace driven by activities of third parties affiliated with the Firm or by actions of the Firm, its officers or employees, creating negative publicity and damage to the Firm's reputation.
<b>Strategic Risk</b>	Risk to baseline earnings from misaligned design and implementation of the Firm's overall strategic objectives and the associated business unit strategic initiatives required to enable them, and any threat to the effective and efficient execution of the Firm's strategic business initiatives.
<b>Capital and RWA Risk</b>	Risks to the Firm's spot or projected capital ratios due to adverse movement in the drivers of capital (numerator) and RWA, balance sheet or off-balance sheet items (denominator).
<b>Operational Risk</b>	Risk of loss, or of damage to the Firm's reputation, resulting from inadequate or failed processes or systems, from human factors or from external events (e.g., fraud, theft, legal and compliance risks, cyber-attacks or damage to physical assets).

## **F Forecasting Methodologies – Morgan Stanley’s Internally Developed Severely Adverse Scenario (1 of 3)**

### **Overview**

- The Firm’s capital ratios under Morgan Stanley’s Internally Developed Severely Adverse Scenario reflect the effect of the hypothetical macroeconomic and market environment on the revenues, expenses and the resources (e.g., assets and headcount) available to the Firm’s business segments as well as market, credit and operational risk loss projections.
- Under Morgan Stanley’s Internally Developed Severely Adverse Scenario, the Firm employs appropriate forecast methodologies to project the impact of the hypothetical assumptions over the forecast time horizon.
- Several of these forecast methodologies are partially regression driven, with certain limitations that are inherent in all types of regression models. The models contain various assumptions such as the historical relationships between Firm performance and relevant macroeconomic and market variables as well as expectations of customer behavior. Changes to these assumptions can materially affect forecast results.

### **Pre-Provision Net Revenue (“PPNR”)**

- The Firm’s PPNR forecast reflects a detailed process in which each major business develops a nine-quarter projection. The projection considers:
  - Key macroeconomic and market variables that historically demonstrate the highest correlation to the level and growth rate of industry and Firm business volumes and net revenues;
  - Expectations of industry dynamics under the scenario; and
  - The impact of reduced market activity on operating costs and operational risk losses.

## **F Forecasting Methodologies – Morgan Stanley’s Internally Developed Severely Adverse Scenario (2 of 3)**

- Operational Risk’s Methodology is comprised of Baseline Loss & Stress Loss:
  - Baseline Loss, the run-rate of operational risk losses, is calculated through: (1) regression model output based on the correlation of internal loss data to select macroeconomic variables for macro-sensitive risk segments and (2) historical loss based estimation for non-macro-sensitive risk segments which reflects the Firm’s nine-quarter average realized losses over the Firm’s loss data collection history.
  - Stress Loss, the historical run-rate and large idiosyncratic losses, is calculated through: (1) regression model output for macro-sensitive risk segments based on the correlation of internal loss data to select macroeconomic variables; (2) historical loss based estimation for non-macro-sensitive risk segments which reflects the Firm’s nine-quarter average realized losses over the Firm’s loss data collection history; (3) scenario analysis by aggregating the severities of a chosen set of idiosyncratic scenarios designed to stress material risks; and (4) aggregating stressed outcomes of material pending litigation matters in the Firm’s Litigation Docket net of any legal reserves taken.

### **On and Off-Balance Sheet Exposures**

- Balance sheet forecasts are developed with each of the business segments and are driven by multiple elements, including the prescribed macroeconomic and market variable paths and historical data.
- Off-balance sheet forecasts are driven by multiple factors including the prescribed macroeconomic and market variable paths, reflecting the application of the U.S. Basel III rules.

### **Risk-Weighted Assets**

- The Firm’s RWA forecast reflects the application of the Standardized Approach under U.S. Basel III for the Common Equity Tier 1, Tier 1 Capital and Total Capital Ratios.
- The Firm’s methodology aligns projections of standardized market and credit risk calculations to projected movements in the balance sheet and ties projections of model-driven market RWAs to the macroeconomic and market variables included in the forecast.

## **F Forecasting Methodologies – Morgan Stanley’s Internally Developed Severely Adverse Scenario (3 of 3)**

### **Losses**

- Market and Credit risk stress loss projections include trading positions, private equity investments, counterparty exposures, loans held for investment, held for sale or carried at fair value and available-for-sale and held-to-maturity securities.
- Stress losses on the Firm’s mark-to-market trading, private equity and counterparty risk portfolios are estimated by applying Morgan Stanley’s Internally Developed Severely Adverse Scenario instantaneous upfront market shock.
- Losses for counterparty default are computed by applying the instantaneous upfront market shock to the relevant exposures, and assuming the default of a large counterparty and additional knock-on defaults. Additionally, losses arising from the impact of issuer defaults on trading positions are also captured.
- Default losses on corporate, commercial and residential real estate and securities based loans are estimated using stressed probability-of-default, stressed loss-given-default and exposure-at-default under Morgan Stanley’s Internally Developed Severely Adverse Scenario. Additionally, mark-to-market stress losses are calculated on loans held for sale and loans carried at fair value, and increases in allowance for credit loss are projected for loans held for investment.

### **Capital Position**

- The Firm’s capital position is projected by aggregating revenue and loss estimates as outlined above and deriving their respective impacts on the levels of Common Equity Tier 1 Capital, Tier 1 Capital and Total Capital on a quarterly basis over the nine-quarter forecast horizon.