Stress Test Scenarios

Bank of Italy
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The views expressed here are those of the author and do not represent the views of the Board of Governors of the Federal Reserve System.

Stress Testing in the United States

- The financial crisis highlighted the importance of forward-looking capital adequacy assessment rather than a point in time assessment.

- First use of stress testing as a supervisory tool: 2009 Supervisory Capital Assessment Program (SCAP).

- 2010 Dodd-Frank Act introduced the Comprehensive Capital Analysis and Review (CCAR), which requires both a qualitative review of capital planning and a quantitative capital analysis ("the stress test").
  - Bank submit capital plan and internal data on income, expenses and portfolios
  - Supervisory stress testing for banks with assets greater than $100 billion.
  - Company-run stress testing for banks with assets greater than $10 billion.

- The Federal Reserve can object to a BHC's capital plan for qualitative and/or quantitative reasons.
  - The qualitative review was limited to firms with assets over $250 billion starting in 2017.

Scenario Design

- The Federal Reserve is required to conduct stress tests under two scenarios: the baseline and the severely adverse scenario
  - The Federal Reserve published a policy statement on the scenario design framework for stress testing.
  - A standard set of scenarios supports cross-firm analysis and provides a valuable insight to supervisors and the market.

- Approach for developing the macroeconomic scenarios
  - The **baseline scenario** reflects the most recently available consensus views of the macroeconomic outlook.
  - The **severely adverse scenario** reflects the conditions of post-war U.S. recessions (the recession approach).

- A more severe scenario, all other things being equal, generally translates into larger projected declines in regulatory capital.
  - This translation is far from mechanical; it will depend on factors that are specific to a given BHC, such as underwriting standards and the BHC's business model.

How scenarios enter the calculation of post-stress capital

Change in regulatory capital	
= Change in equity capital	
= Net income	
= Pretax net income	
= PPNR *- Provisions* *- Other losses*	Scenarios affect pretax net income through the models describing PPNR, Losses, and Balances
- Taxes	
- Other changes to net income	Extraordinary items and valuation allowance
- Net capital distributions	Different Assumptions in CCAR and DFAST exercises
- Deductions from regulatory capital **+ Additions to regulatory capital**	Based on Capital Rules

Modeling outcomes under stress scenarios

- Models transform the risk and return characteristics of the firm and the stress scenario into relevant stressed outcomes, such as revenues or losses.

- Losses on the accrual loan portfolio
  - Wholesale: Corporate loans and CRE.
  - Retail: Residential mortgages, credit cards, auto, other retail.
  - Loan loss provisions
- Other losses
  - Loans held-for-sale or measured under the fair-value option
  - Securities
  - Trading and private equity
  - Counterparty default
- PPNR
  - Net interest income, non-interest income and expense
  - Operational risk
  - Mortgage repurchase
- Balance sheet and RWA

What Changed in CCAR 2018?

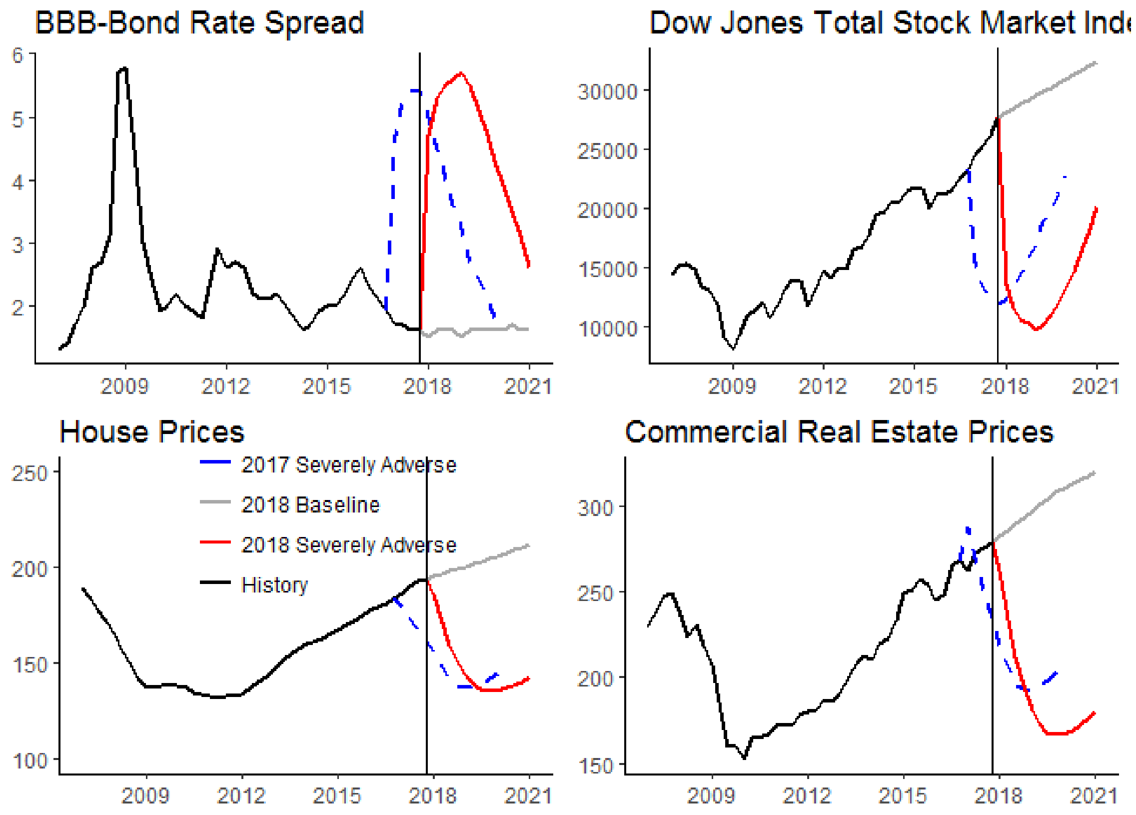
- **Countercyclical features** of the CCAR 2018 severely adverse scenario included:
  - Larger increase in the unemployment rate
  - Larger price declines for stocks, homes, and commercial real estate
  - Larger and more persistent increase in corporate bond spread
- Scenario also featured a **steeper yield curve**, stemming from an assumed aversion to long-term, fixed-income assets
  - Long rates remain unchanged, while short rates decline
- Relative to CCAR 2017, this year's **global market shock** includes:
  - Larger shocks to corporate bond and certain sovereign CDS spreads
  - A rise and a steepening in the U.S. yield curve
  - US dollar depreciation relative to the other major currencies
- More stressful scenario contributed to a greater decline in net income and other comprehensive income.
  - Effects differed across firms, based on size and business mix.
  - For most firms, scenario resulted in higher revenue and larger loan losses, which partially offset each other in net income.
  - For the largest firms, it also led to lower trading revenue, higher unrealized losses on securities, and higher counterparty credit losses.

Changes in Severely Adverse Scenario

Select Scenario Variables, Severely Adverse Scenario

Variable	CCAR 2018	CCAR 2017
Macroeconomic Scenario		
Unemployment Rate	↑ almost 6 p.p. to 10%	↑5 $^{1}/_{4}$ p.p. to 10%
BBB Spread	↑ to 570 bps	↑ to 540 bps
3-month Treasury Rate	↓ just over 1 p.p. to just above 0 %	↓1/4 p.p. to just above 0 %
10-year Treasury Rate	Constant at 2.4%	↓ 1 $^{1}/_{2}$ p.p. to 0.8%, then ↑ to 1.8%
House Prices	↓30%	↓25%
CRE Prices	↓40%	↓35%
Equity Prices	↓65%	↓50%

Paths of Select Scenario Variables



Notes: sample consists of 34 firms in DFAST 2017 and 35 in DFAST 2018.

Key Documents

- Comprehensive Capital Analysis and Review 2018: Assessment Framework and Results, June 2018

- 2018 Supervisory Scenarios for Annual Stress Tests Required under the Dodd-Frank Act Stress Testing Rules and the Capital Plan Rule, February 2018

- Comprehensive Capital Analysis and Review 2018 Summary Instructions, February 2018

- Enhancements to Federal Reserve Models Used to Estimate Post-Stress Capital Ratios

Appendix - Stress Testing Large BHCs: CCAR and DFA

	CCAR post stress capital analysis		DFA Stress Test	
Who conducts?	Federal Reserve	Company	Federal Reserve	Company
Which scenario should be used?	FR Baseline FR Severely adverse	FR Baseline FR Severely adverse BHC Baseline BHC Stress	Annual • FR Baseline • FR Severely adverse No mid-cycle	Annual • FR Baseline • FR Severely adverse Mid-cycle • BHC Baseline • BHC Stress
What capital actions are applied under each scenario?	Capital actions proposed under the BHC Baseline scenario are applied in all scenarios	Proposed capital actions under the BHC Baseline scenario are applied in all scenarios, except for the BHC Stress scenario, in which the BHC Stress capital actions are applied.	DFA capital actions for all scenarios. These capital actions are based on historical dividends, contracted payments, and generally no repurchases or issuances.	DFA capital actions for all scenarios. These capital actions are based on historical dividends, contracted payments, and generally no repurchases or issuances.
Minimum ratios	All applicable regulatory ratios must be maintained	All applicable regulatory ratios must be maintained	No minimum ratios	No minimum ratios