Supervisory Stress Test Disclosures: Motivation and Impact

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Overview

- U.S. supervisory stress testing
  - Timeline/history
  - What does the Fed disclose?
- Motivation for disclosing supervisory stress test results
- Is there market-relevant information in the disclosures?
  - Still relevant in more recent disclosures?
  - Impact on non-stress-tested BHCs
- Is private information production reduced?

History of U.S. Bank Stress Testing

- 2009: Supervisory Capital Assessment Program (SCAP)
  - Performed during the height of the financial crisis
  - Focus on 19 largest individual BHCs – 2/3 of the assets of the banking system
  - Banks had to raise capital to meet any shortfall relative to target
  - Banks raised $100 billion in new common equity following the SCAP
  - **Published individual BHC results – a big innovation**

- 2011: Comprehensive Capital Analysis and Review (CCAR)
  - Supervisory assessment of capital adequacy; initially 19 largest BHCs, now 30+ large BHCs
  - Assessment of both quantity of capital and of BHCs' internal management processes
  - Both BHC-run and supervisory stress test projections are inputs
  - **Disclosure of the program objectives and process (but not results) in 2011**
  - **Disclosure of supervisory stress test results starting in 2012**
  - **Disclosure of CCAR outcomes (object/not object) starting in 2013**

- 2013: Dodd-Frank Act Stress Tests (DFAST)
  - Requires BHC-run and supervisory stress test projections; initially 18 largest BHCs, now 30+ large BHCs
  - **Disclosure of supervisory and BHC results starting in 2013**

What does the Fed disclose?

- DFAST Stress test results (numbers) for each firm under 2 scenarios:
  - Minimum and ending regulatory capital ratios over the 9-quarter horizon
  - Pre-tax net income and main components
    - « Pre-provision net revenue, loan loss provisions, securities gains/losses, trading and counterparty losses, other revenue/losses
  - Other comprehensive income
  - RWA growth
  - Loan loss dollar amounts and rates by loan category
- CCAR outcomes:
  - Minimum capital ratios (original and adjusted)
  - Object/non-object decision and rationale
- Scenarios, as well as scenario development process
  - Baseline, adverse, severely adverse macro scenarios
  - Adverse and severely adverse global market shocks

What else does the Fed disclose?

- Stress test framework, key assumptions, and processes:
  - Framework and key assumptions, such as:
    - « Follow GAAP and regulatory capital rules
    - « Assumes no credit supply contraction
    - « No firm-specific adjustments
  - Independent supervisory models, firm-supplied data
    - « Regulatory reports publicly available (the report forms, not the data)
  - Independent internal validation of supervisory models

- Model descriptions
  - 16 major modeling areas, some with detail on sub-area models
    - « Securities losses: fair value (3 distinct models) and OTTI (3 distinct models)
  - Empirical structure and key assumptions
    - « Definition of default; PD, LGD, EAD
  - Key macro variable drivers

- Material model changes announced in advance

Why disclose supervisory stress test results (even when times are good)?

- Credibility via public scrutiny
  - Of the stress test projections
  - Of the stress testing process
  - Potentially important when transitioning to stress period
- Commitment
  - Keeps focus on supervisors in generating stress test results
  - Helps retain supervisory resources
- Provides a public history of stress test results
  - Identify trends and changes, in the aggregate and for individual firms
- No “news” in the fact that supervisors are disclosing information

Is there information in supervisory stress test disclosures?

- Results from recent paper with Mark Flannery and Anna Kovner
  - "Evaluating the Information in the Federal Reserve Stress Tests" (Forthcoming, *JFI*)

- Several papers have done event studies examining the market response to supervisory stress test disclosures in the U.S. and Europe, with mixed findings.
  - Statistically significant average cumulative abnormal returns (CARs) for some disclosure dates but not others
  - Average CARs are sometimes positive, sometimes negative
  - Declining significance over time and high year-to-year correlation of results

- But is the standard event study methodology appropriate in this setting?
  - Market knows when stress test results will be released (not a surprise event)
  - Results could be "good news" or "bad news" depending on ex ante market expectations
  - A direction-neutral measure of market reaction could be more appropriate in this setting
  - We examine several such measures (other papers look at some of these as well)

Direction neutral information measures

- Absolute value CAR: |CAR|
  - Are there abnormal returns (positive or negative) around disclosure dates?

$$Average\ |CAR| = \frac{\sum_{i=1}^{J} |CAR_i|}{J}$$

- Cumulative abnormal trading volume: CAV
  - Is trading volume higher than would be expected around disclosure dates, based on a “market model” for trading volume:

$$Vol_{i,t} = \beta_0 + \beta_1 Vol_{Market,t} + \varepsilon_{i,t}$$

- Absolute value cumulative abnormal CDS spread changes: |CACDS|
  - Are there abnormal CDS spread changes (positive or negative) around disclosure dates?

$$(CDS_{i,t} - CDS_{i,t-1}) = \gamma_0 + \gamma_1 (CDX_t - CDX_{i,t-1}) + \varepsilon_{i,t}$$

- Change in implied volatility: ” VOL
  - Does option-implied volatility decrease around disclosure dates?

$$\Delta VOL = \sum_{j=-1}^{1} \%\Delta VOL_{(t+j,t+j-1)}$$

Results based on direction-neutral measures

- We look at 9 disclosure events between 2009 and 2015 related to SCAP (2009), CCAR (2011 to 2015), and DFAST (2013 to 2015) for both stress-tested and non-stress-tested BHCs.

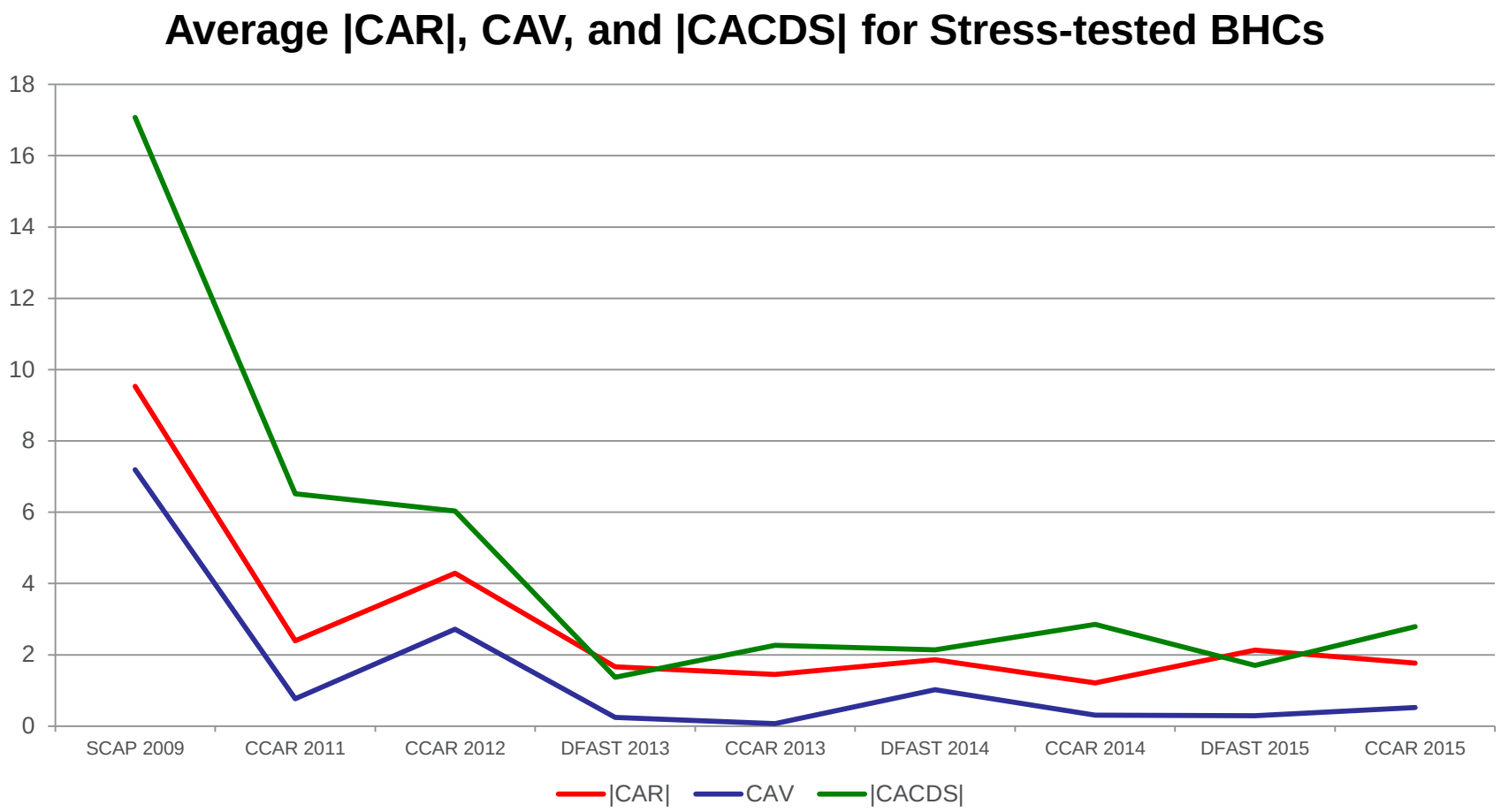
- We find a statistically significant information impact for both stress- tested and non-stress-tested BHCs: on average across all event dates, on average excluding the SCAP, and for individual event dates

- Results are more consistently significant across event dates for |CAR| and CAV than for |CACDS| and ” VOL

- Results are larger and more significant for stress-tested BHCs than for non-stress-tested

- Results related to the SCAP are largest, but measures continue to be statistically significant even for more recent event dates

Stress test disclosures continue to provide market-relevant information



Impact on non-stress-tested BHCs

- We find a statistically significant information impact of supervisory stress test disclosures for BHCs that are not stress-tested. Why?
  - The stress tests reveal fundamental information about the banking industry
  - The stress tests reveal information about the Fed's supervisory stance towards large BHCs
    - « Dividends can be limited under CCAR
    - « Stringency of supervisory assessments of internal processes

- Our results seem consistent with information about fundamentals rather than just information about supervision
  - Information effects are larger for non-stress-tested BHCs that are more similar to stress-tested BHCs (based on stock return correlation), suggesting business focus is important
  - Information effects are not larger for non-stress-tested BHCs that are more likely to become stress-tested (those that are closest to the CCAR/DFAST asset size cutoff, including those that do eventually join the stress-tested cohort)

Is private information production crowded out?

- In theory, supervisory disclosures could crowd out private information production (Goldstein and Sapra 2014)
- We look for evidence of crowding out by examining equity analyst coverage of stress-tested and non-stress-tested BHCs from 2006 to 2015
- Using a difference-in-difference approach, we find:
  - The number of analysts following stress-tested BHCs increased following the start of supervisory stress test disclosure (over and above increase for BHCs in general)
  - No incremental change (increase or decrease) in the mean forecast error or variation in forecasts among analysts for stress-tested BHCs relative to non-stress-tested
    - « If anything the mean forecast error declines for stress-tested BHCs relative to non-stress-tested firms (only weakly statistically significant)
- Bottom line: no evidence of crowding out

Caveats

- Our analysis is conducted mostly on data from a period of relatively benign economic conditions and of increasing stability in the banking system
  - Just as supervisory information might be more market-relevant in stressed environments (consistent with the strong results for the SCAP disclosures), negative consequences might also become more important in these environments

- By the nature of the SCAP/CCAR/DFAST programs, the sample of firms is relatively small

- Continued monitoring and analysis seems valuable, especially as more annual stress test results are disclosed

Summary

- The Federal Reserve has disclosed supervisory stress test results since 2009, including annual disclosures since 2012
  - Results (numbers), scenarios, model descriptions, framework and processes, program outcomes (CCAR)
  - Credibility, commitment, track record/time series, impact of decision to disclose
- Based on direction-neutral measures, the information appears to be market-relevant
  - The magnitude of the impact has declined since SCAP and the initial CCAR disclosures, but continues to be statistically significant
- The information is market-relevant for both stress-tested and non-stress-tested BHCs
  - Results suggest impact for non-stress-tested BHCs reflects information about banking industry fundamentals, rather than just supervisory stance
- No evidence of crowding out of private information production (so far)