

# The Information Content of Stress Test Announcements

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September 12, 2022

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<sup>1</sup>The views expressed in this presentation are solely our responsibility and should not be interpreted as reflecting the views of the Federal Reserve System or of any other person associated with the Federal Reserve System.

# Motivation

During the GFC, as banks posted losses of hundreds of billion dollars, investors panicked and moved away from bank stocks.

On September 17, 2008, two days after Lehman Brothers collapsed, and one day after the announcement of a 85-billion-dollar bailout for AIG, the share price of Morgan Stanley dropped 24 percent on the news of merger talks with Wachovia.

The opacity of the U.S. financial institutions was making it impossible to distinguish between temporarily illiquid but viable banks vs. insolvent banks.

Although the TARP was ready, the Treasury decided to pair it with a stress test to enhance transparency and reduce the uncertainty.

# Motivation

Nowadays, stress tests have become the tool deployed around the world to gauge the ability of banks to withstand harsh economic conditions.

They are subject to intense media scrutiny, and negative results have been associated with top staff changes (e.g., 2012 resignation of Citi CEO).

However, stress test are costly, if they are not informative, there might be no gain in taking up scarce resources to run them during periods of acute stress.

# Motivation

- ▶ Did stress test achieve the objective of making financial institutions more transparent?

We analyze the reaction of market participants to the U.S. stress test announcements.

One hurdle for our analysis: the FED can curb capital distribution plans - dividends or share buyback - in case of negative results

- ▶ Are market participants interested in the resilience of the banks or are they just gauging future cash-flows based on the likely actions of the Fed?

If the focus is solely on cash-flows, a limited class of investors benefits from the stress tests. By contrast, a focus on resilience implies that the stress tests convey information relevant for the broader public.

# U.S. Stress Test Redux

Our empirical strategy is linked to the peculiar structure of the U.S. stress tests.

They consist of the Dodd-Frank Act Stress Test (DFAST) and The Comprehensive Capital Analysis and Review (CCAR). **Through 2019:**

1. Results for CCAR and DFAST were announced about **one week apart**;
2. DFAST and CCAR evaluated capital adequacy assuming the **same supervisory macroeconomic scenario**;
3. DFAST results were based on a **dummy capital plan** based on previous year's capital distributions;
4. CCAR results reflected **approved capital distributions**.

## Other Important Characteristics of the U.S. Stress Tests

An important difference between DFAST and CCAR is represented by the supervisory consequences of these two tests for the banks. The Federal Reserve:

- ▶ did not take any supervisory action following DFAST,
- ▶ but could restrict capital distributions following CCAR.

*This difference will inform our econometric models and help us to interpret our results.*

# Three Challenges

Our analysis, based on an array of event studies, faces three challenges:

1. To select a **summary measure** of the stress test results  
→ *We focus on the minimum tier 1 ratio over the scenarios.*  
The scope of the stress tests is to assess the capital adequacy and capital planning practices.

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2. To extract the **surprise component** controlling for market participants' expectations  
→ *We exploit the differences between CCAR and DFAST.*



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→ *We focus on the minimum tier 1 ratio over the scenarios.*  
The scope of the stress tests is to assess the capital adequacy and capital planning practices.
2. To extract the **surprise component** controlling for market participants' expectations  
→ *We exploit the differences between CCAR and DFAST.*
3. To interpret the **market reaction**  
→ *We focus on bank stocks and credit default swaps.*

## Defining Surprises: CCAR

- ▶ The surprise is the difference between the minimum tier 1 ratio attained under this year's DFAST minus this year's CCAR.
- ▶ DFAST results are released a week before CCAR: this measure capture the surprise component in CCAR results.
- ▶ DFAST is based on last year's capital distributions, CCAR on the current year, but the macro scenario is the same: the surprise is the distribution.
- ▶ A positive difference points to an expansion in approved capital distributions relative to last year's.

# Defining Surprises: DFAST

- ▶ The surprise is the difference between the the minimum tier 1 ratio for the current year's DFAST results and the minimum for the **previous year's** CCAR results.
- ▶ A higher minimum capital requirement may indicate greater resilience **under a new macro scenario** and that the BHC may proceed with a larger capital distribution compared to last year.

## Capturing Market Reactions

The stress test results are announced at 4:30 PM, after the closing of the stock market trading day.

→ *For stocks, we focus on overnight returns for participating banks surrounding the stress test announcements.*

CDS contracts are traded over the counter, with the trading day closing after the stress-test announcements.

→ *For CDS contracts, we focus on the daily change in the spread relative to Treasuries of comparable maturity.*

We focus on 5-year contracts, the most liquid.

# Panel Regression Model

We use the following panel regression model:

$$y_{i,t+\nu} = \alpha + \beta s_{i,t} + \Phi_t + \Omega_{i,t} + \Psi_i + u_{i,t+\nu} \quad (1)$$

where  $t$  is the day of the CCAR or DFAST announcement and where the left-hand-side term,  $y_{i,t+\nu}$ , is in turn:

- ▶ the overnight percentage change in the stock price of bank  $i$  through  $t+1$ .
- ▶ the daily change of the CDS spread for bank  $i$  for day  $t$ .

## Panel Regression Model (RHS)

As for the RHS of the panel regression model:

$$y_{i,t+v} = \alpha + \beta s_{i,t} + \Phi_t + \Omega_{i,t} + \Psi_i + u_{i,t+v} \quad (2)$$

- ▶  $s_{i,t}$  is our surprise measure.
- ▶  $\Omega_{i,t}$  control variables for supervisory actions and other firm-specific characteristics;
- ▶  $\Phi_t$  time fixed effects;
- ▶  $\Psi_i$  firm-specific fixed effects.

## Panel Regression Results: DFAST

	(1)	(2)	(3)	(4)
	Stock returns	Stock returns	$\Delta$ CDS spreads	$\Delta$ CDS spreads
DFAST-CCAR(-1) minimum	0.216* (0.017)	0.217* (0.017)	-0.383** (0.005)	-0.407** (0.004)
DFAST-CCAR(-1) start	0.0710 (0.393)	0.0776 (0.334)	-0.212 (0.174)	-0.162 (0.310)
Starting capital	-0.236* (0.015)	-0.236* (0.015)	0.340+ (0.059)	0.342+ (0.060)
Objection or non-approval, lagged		-0.0660 (0.749)		-0.446 (0.434)
r <sup>2</sup>	0.634	0.634	0.422	0.424
N	102	102	93	93

*p*-values in parentheses

+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

All regressions also include time and bank fixed effects.

## Takeaways: DFAST Regression Results

- ▶ When the DFAST minimum tier 1 capital ratio is higher than the previous year's CCAR minimum, stock prices systematically increase.
- ▶ This increase may happen for two non-mutually exclusive reasons:
  1. **Risk-premium channel**  
Market participants interpret increases in tier 1 capital ratio minima as a signal of greater resilience to adverse conditions, reducing the risk of holding the stocks of those banks
  2. **Cash-flow channel**  
Market participants interpret the increase in tier 1 capital minima as a signal that BHCs may have more capital to distribute compared to the previous year .

The reaction of CDS spreads can help corroborate or disprove the importance of the risk-premium channel.



## Takeways: DFAST Regression Results, CDS spreads

- ▶ Results point to a systematic decrease of CDS spreads when the DFAST minimum tier 1 capital ratio is higher than the previous year's CCAR minimum.
- ▶ Financial market participants interpret a higher stressed capital ratio as an indication of **greater resilience** of banks in face of harsh economic conditions.
- ▶ A corollary of this finding is that financial market participants view the **stress test scenario** as **relevant** and the results as **credible**.

# Market Reaction to CCAR Announcements

	(1)	(2)	(3)	(4)
	Stock returns	Stock returns	$\Delta$ CDS spreads	$\Delta$ CDS spreads
DFAST-CCAR minimum	0.0629 (0.620)	0.0401 (0.724)	-0.266 (0.463)	-0.269 (0.459)
Forced decrease in payouts	0.311 (0.438)	0.324 (0.347)	-0.301 (0.570)	-0.368 (0.486)
Starting capital	0.305* (0.015)	0.170+ (0.083)	0.114 (0.718)	0.144 (0.659)
Objections or non-approvals		-2.145** (0.000)		0.532 (0.450)
r2	0.590	0.717	0.524	0.527
N	150	150	111	111

All regressions also include time and bank fixed effects.

## Takeaways: CCAR Results

- ▶ Our surprise measure has an insignificant coefficient for both stock returns and CDS spreads.
- ▶ If the Federal Reserve issued a non-approval or an outright objection to the proposed capital plans, stock returns systematically decreased – column (2) .
- ▶ This decrease is sizable for overnight returns. On average, it is sized at about 2.2 percentage points, all else equal.

## Takeaways: CCAR Results, CDS spreads

- ▶ The lack of significance of the coefficient on the same dummy in the regression of CDS spreads shows that market participants are focused supervisory actions on capital distributions – column (4) .
- ▶ After all the previously released DFAST results already provided information on bank resilience in the face of adverse conditions that, as we showed, is systematically related to CDS spreads.

# Robustness

- ▶ We consider robustness of our regression results to numerous specification changes.
- ▶ We focus on two types of sensitivity analysis.
  1. The first type considers alternative specifications keeping the change in tier 1 minimum capital across stress test cycles as the surprise measure for the event studies.
  2. The second type considers alternative surprise measures.
- ▶ In sum, the baseline results are strikingly robust.

# Conclusion

- ▶ Our results back the widespread use of stress tests to inform market participants on the soundness of banks.
- ▶ Market participants value the stress test announcements not only to gauge future capital distributions, which would simply benefit a limited set of investors, but also as indicators of bank resilience, with importance for the broader public.
- ▶ In the United States, stress tests have supervisory consequences for bank capital, but our results point to the usefulness of the information provided by stress tests even when the results are not tied to immediate capital actions by the regulator, as is the case in other countries.