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Guarantees and Capital Infusions in Response to Financial Crises C: U.S. 2009 Stress Test¹

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Abstract

When President Obama took office in 2009, the Treasury focused on restarting bank lending and repairing the ability of the banking system as a whole to perform the role of credit intermediation. In order to do so, the Treasury needed to raise public confidence that banks had sufficient buffers to withstand even a very adverse economic scenario, especially given heightened uncertainty surrounding the outlook of the U.S. economy and potential losses in the banking system. The Supervisory Capital Assessment Program (SCAP)—the so-called “stress tests”—sought to rigorously measure the resilience of the largest bank holding companies. Those found to have insufficient buffers were able to raise funds from the private sector, and if unable to do so, the Capital Assistance Program (CAP) would capitalize the firm with public capital.

¹ This case study is one of three Yale Program on Financial Stability (YPFS) case modules considering Guarantees and Capital Infusions in Response to Financial Crises. The others are:

- *Guarantees and Capital Infusions in Response to Financial Crises A: Haircuts and Resolutions.*
- *Guarantees and Capital Infusions in Response to Financial Crises B: U.S. Guarantees During the Global Financial Crisis.*

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1. Introduction

In February 2009, the Treasury announced the Capital Assistance Program (CAP) in conjunction with the Supervisory Capital Assessment Program (SCAP). Their purpose was “to restore confidence throughout the financial system that the nation’s largest banking institutions have a sufficient capital cushion against larger than expected future losses, should they occur due to a more severe economic environment, and to support lending to creditworthy borrowers.” The Treasury was concerned about the lack of near-term private capital inflows large enough to break the dynamic between the perceived shortage of capital in the system and the loss of confidence that shortage engenders in the health of individual institutions in the strained economic environment (Treasury White Paper).

To restore confidence, the SCAP employed a stress test and publicly released the results and methodology of the tests. Firms that required additional capital to meet their SCAP buffer were given six months to raise private capital, and the firms unable to do so would then rely upon public capital sourced from TARP funds via the CAP. Smaller firms not included in the SCAP were eligible to apply for Treasury funds through the CAP.

The remainder of the case is organized as follows: Section 2 describes the SCAP’s design and results, and Section 3 describes the CAP’s design and results.

Questions

1. What was the justification for using the Tier 1 Common capital ratio in lieu of the tangible common equity ratio?
2. What was the rationale of having the mandatory participation in the SCAP set at an asset size of \$100 billion or over? What effect did the policymakers and regulators predict this set threshold would have on the ongoing and future risk management of financial institutions?
3. How effective was the SCAP in restoring confidence in the supported institutions, the other non-supported institutions, and the overall financial market? Would the SCAP be effective in preventing and managing future crises in not only selected large and complex financial institutions, but also the financial markets more broadly?
4. Is the fact that CAP went un-utilized a sign of an effective government effort to restore confidence in the market or a reluctance on the part of the banks to take on the government intervention in fear of high costs or stigma?
5. How did supervisors decide upon capital adequacy ratios of a Tier 1 capital ratio of six percent and a Tier 1 Common capital ratio of four percent?
6. What was the advantage to measuring the stress rather than in-the-moment capital in the SCAP?
7. Why was the window for firms to raise private capital or else turn to the CAP six months?
8. Discuss alternative ways the regulators could have provided transparency in their tests.

9. How did regulators decide to allow firms with Treasury capital from the CAP to convert the Treasury's preferred shares to common equity at a 10% discount to the firm's stock price?
10. To what extent did the firms challenge the SCAP's initial findings, and did this have any impact on the finalized, published stress test results?
11. What designs of a capital injection program help strike the right balance between sufficiently protecting the taxpayer's interests and effectively restoring lending activity in the market?

2. Supervisory Capital Assistance Program (SCAP)

U.S. bank holding companies (BHCs) with assets in excess of \$100 billion⁵ on a consolidated basis were required to participate in the coordinated "stress test" known as the SCAP, and had access to the CAP immediately as a means to build any necessary additional buffer although they could raise private capital over the following six months. The Treasury worked with federal banking regulators to develop this stress test to determine the health of the relevant financial institutions. As a result, the 19 largest BHCs, which together held two-thirds of assets and more than one-half of the loans in the U.S. banking system, participated in the SCAP on a mandatory basis (OFS 2010).

While the SCAP was similar to stress tests that firms undertook as part of their ongoing risk management, the objective of this program was "to conduct a comprehensive and consistent assessment simultaneously" across the largest BHCs using a common set of macroeconomic scenarios and a common forward-looking conceptual framework. This framework allowed supervisors to apply a consistent and systematic approach across firms to evaluate projected losses and resource estimates submitted by the firms and to conduct cross-firm analysis on the aggregate. The SCAP was considerably more comprehensive than stress tests that focus on individual business lines because it simultaneously incorporated all major assets and revenue sources for each firm (FRS April 2009).

The SCAP was an important complement to the Treasury's support of the banking system. The Federal Reserve System (Fed) believed that the SCAP would help ensure the strength of the banking sector and revive markets' confidence in the banks. It believed that the program would help protect the taxpayers' investments in U.S. financial institutions (FBS May 2010). It also believed the high level of transparency would help rebuild confidence in the banking system. In its results, the Fed noted, "The decision to depart from the standard practice of keeping examination information confidential stemmed from the belief that greater clarity around the SCAP process and findings will make the exercise more effective at reducing uncertainty and restoring confidence in our financial institutions" (Federal Reserve May 7, 2009). Some two weeks later, Treasury Secretary Geithner's statement before the Senate Banking Committee on May 20, 2009, stated the review conducted under the SCAP was indeed "helping to increase confidence in the financial system" (Geithner 2009).

⁵ As measured according to the firms' assets report for 2008Q4 in the Federal Reserve's Consolidated Financial Statements for Bank Holding Companies (FR Y-9C).

Design of SCAP

Macroeconomic Conditions

The Fed provided indicative loss rates under two different macroeconomic environments—“baseline” and “more adverse”—to guide BHCs’ estimates. The Fed supervisors chose particularly severe conditions in the “more adverse” scenario, with the estimated commercial bank two-year loan loss rate at 9.1%; a rate higher than any observed from 1920 to 2008. The scenario also included estimates of unemployment at the highest level since the 1930s. Figure 1 details the two scenarios. Firms used these two scenarios to conduct their own estimates, and then the Fed staff analyzed each firm’s estimates independently (FRS May 2009).

Test Design

The SCAP involved the projection of losses on loans, assets held in investment portfolios, and trading-related exposures as well as the firm’s capacity to absorb losses that all combined to determine a sufficient capital level to support lending under a worse-than-expected macroeconomic scenario. Given the heightened uncertainty about the economic outlook and losses in the banking system and the possibility for adverse economic outcomes to be magnified through the banking system, supervisors believed it “prudent for large BHCs to hold substantial capital to absorb losses” should the economic downturn be longer and deeper than anticipated (FRS April 2009). In this sense, the tests represented a set of “what-if” scenarios and were not a set of estimates or projections (FRS May 2009, page 14).

Fed staff examined both the level of capital in each BHC as well as the composition of the capital held by evaluating the Tier 1 risk-based capital ratio, which is the ratio of Tier 1 capital to risk-weighted assets. The Fed also evaluated common equity’s share of Tier 1 capital. Tier 1 capital was required to be at least half of qualifying total capital (12 CFR part 225, Appendix A, Section II.A.1). In practice, these measures are referred to as the Tier 1 Common capital ratio and the Tier 1 capital ratio where the former excludes preferred shares and non-controlling interests and the latter includes them. Regulators focused on Tier 1 Common specifically as it is the first to absorb losses and so acts as a permanent cushion that can adjust to changing circumstances by varying dividends and their timing (12 CFR part 225, Appendix A).

In designing and implementing the tests, the Fed sought to answer two questions to determine the resources required to withstand a more adverse macroeconomic environment (emphasis added):

Figure 1: SCAP Economic Scenarios

	2009	2010
Real GDP¹		
Average Baseline ²	-2.0	2.1
Consensus Forecasts	-2.1	2.0
Blue Chip	-1.9	2.1
Survey of Professional Forecasters	-2.0	2.2
Alternative More Adverse	-3.3	0.5
Civilian Unemployment Rate³		
Average Baseline	8.4	8.8
Consensus Forecasts	8.4	9.0
Blue Chip	8.3	8.7
Survey of Professional Forecasters	8.4	8.8
Alternative More Adverse	8.9	10.3
House Prices⁴		
Baseline	-14	-4
Alternative More Adverse	-22	-7

¹ Percent change in annual average.

² Baseline forecasts for real GDP and the unemployment rate equal the average projections released by Conesus Forecasts, Blue Chip, and Survey of Professional Forecasters in February 2009.

³ Annual average.

⁴ Case-Shiller 10-City Composite, percent change, Q4/Q4.

Source: Federal Reserve (May 7, 2009).

1. If the economy follows the “more adverse” scenario, how much additional Tier 1 capital⁶ would an institution need today to be able to have a **Tier 1 risk-based ratio in excess of six percent** at year-end 2010?
2. If the economy follows the “more adverse” scenario, how much additional Tier 1 Common capital⁷ would an institution need to have today to have a **Tier 1 Common capital risk-based ratio in excess of four percent** at year-end 2010?

Involved BHCs initially estimated their potential losses on loans, securities, trading positions, their pre-provision net revenue, and their resources available from the allowance for loan and lease losses over the two-year horizon, beginning with end of year 2008 financial statement data. Firms estimated loan losses due to failure to pay obligations instead of marking-to-market to find estimated discounts. Further, firms estimated losses stemming from trading-related market and counterparty credit losses.

Particular focus centered on losses in available-for-sale (AFS) and held-to-maturity (HTM) portfolios, as well as counterparty credit risk. Losses in these items would ultimately represent the largest share of total losses. Supervisors analyzed whether securitized assets would become impaired over their lifetime—if this were the case, and if credit support was insufficient to cover expected losses, the security was written down to fair value.

In its analysis, the Fed considered whether a firm intended to sell a security or “whether it is more-likely-than-not that firms will be required to sell the security before recovery of its cost basis.” Both scenarios triggered an “other than temporary impairment” charge. Regulators felt it best practice, following the Financial Accounting Standards Board’s guidance, to account for the eventuality that firms might not be able to hold a security to recovery under more stressful conditions. For securities determined to be other than temporarily impaired, the loss was the difference between the investment’s amortized cost basis and fair value (FRS May 2009, page 7-8).

Market participants also questioned whether Q1 2009 results would be included in the estimates. After a period, regulators decided to include these revenues. In the subsequently published information for each institution, a line item addressed this explicitly as in footnote 3 in Figure 2 noting, “[c]apital actions include completed or contracted transactions since Q4 2008.”

The design also assumed that the institutions would continue to operate under the regulatory framework existing as of December 31, 2008, and under any significant changes in the framework that would take place the next two years. The stress test included an assessment of capital at the end of 2010 capturing expected losses in 2011, as BHCs

⁶ Tier 1 capital is “the sum of core capital elements less any amount of goodwill, other intangible assets, interest-only strips receivables, deferred tax assets, nonfinancial equity investments, and other items” (12 CFR part 225, Appendix A).

⁷ Tier 1 Common capital means “tier 1 capital less the non-common elements of tier 1 capital, including perpetual preferred stock and related surplus, minority interest in subsidiaries, trust preferred securities, and mandatory convertible preferred securities” (12 CFR §225.8). It reflects the fact that common equity is the first element of the capital structure to absorb losses, offering protection to more senior parts of the capital structure and lowering the risk of insolvency. All else equal, more Tier 1 Common capital gives a BHC greater permanent loss absorption capacity and a greater ability to conserve resources under stress by changing the amount and timing of dividends and other distributions (FRS May 2009).

participating in the SCAP booked the majority of their assets on an accrual basis (FRS April 2009).

Any BHC needing to supplement its capital buffer was required to develop a detailed capital plan for approval by its primary supervisor, after consultation with the FDIC and the Treasury. BHCs were also encouraged to design capital plans that, wherever possible, actively sought to raise new capital from private sources (FRS May 2009).

A key feature of the SCAP was the level of transparency involved. Under the SCAP, supervisors published the design of the tests and their results at a detailed level, much of which was usually confidential and not released publicly. The Treasury's Office of Financial Stability (OFS) described this transparency as a novel step taken due to the unprecedented need to restore confidence (OFS 2010). The Fed also noted that this was an unprecedented exercise, and with the extraordinary economic and financial conditions that precipitated the program, the unprecedented nature of the program led the supervisors to take an unusual step of publicly reporting the findings of this supervisory exercise (FRS May 2009). Figure 2 provides a sample of the information published at the firm-specific level.

Results of SCAP

The SCAP found a more adverse economic scenario would result in losses of some \$600 billion among the 19 firms involved through 2010, implying total losses of \$950 billion from mid-2007 to the end of 2010. The same firms held some \$835 billion in Tier 1 capital in Q4 2008 and all exceeded their minimum regulatory capital standards.

This suggested the firms had enough capacity to handle the \$600 billion in losses through 2010: the firms would also generate revenues through the same period that could be used to offset losses, although firms would also need to build reserves against credit problems beyond 2010 for the SCAP. Combining these factors, supervisors found the firms needed to add \$75 billion more in capital buffers to meet the SCAP target buffer by the end of 2010 after accounting for Q1 2009 revenues under the "more adverse" scenario.

Nine of the 19 firms involved were sufficiently capitalized for the four percent Tier 1 Common capital and six percent Tier 1 capital targets. Moreover, almost all the firms had enough Tier 1 capital to withstand the more adverse scenario. However, ten of the firms (i.e. those requiring the \$75 billion more capital) had more capital in forms other than common equity. Figure 3 shows the results by firm.

Assessment of SCAP

Initial reactions to the stress tests were "generally positive," although some market commentators questioned the use of the Tier 1 Common capital ratio instead of the tangible common equity (TCE) ratio, which many had originally assumed would be the supervisors' benchmark. Where the Tier 1 Common capital ratio is the capital of common shareholders as a percent of risk-weighted assets, the TCE ratio is equity less intangible assets, goodwill, and preferred stock equity as a percent of tangible assets, which are the company's total assets less goodwill and intangibles (Wall Street Journal, May 9 2009).

OFS reported that since the release of the results of the SCAP, the institutions subject to the stress test altogether increased their requisite capital by over \$150 billion as of September 2010. Additionally, OFS emphasized that after the SCAP participating BHCs raised this additional capital, more than 80 other banks raised sufficient capital to repay the TARP investments made by the Treasury (although not through the CAP) (OFS 2010).

Figure 2: Example of Published SCAP Results

Supervisory Capital Assessment Program		
Estimates for Bank of America Corporation for the More Adverse Economic Scenario		
<i>The estimates below represent a hypothetical "what-if" scenario that involves an economic outcome that is more adverse than expected. These estimates are not forecasts of expected losses or revenues.</i>		
	Bank of America Corporation	
	\$ Billions	As % of RWA
At December 31, 2008		
Tier 1 Capital	173.2	10.6%
Tier 1 Common Capital	74.5	4.6%
Risk-Weighted Assets	1,633.8	
	More Adverse Scenario	
	\$ Billions	As % of Loans
Estimated for 2009 and 2010 for the More Adverse Scenario		
Total Estimated Losses (Before purchase accounting adjustment)	136.6	
First Lien Mortgage	22.1	6.8%
Second/Junior Lien Mortgage	21.4	13.5%
Commercial and Industrial Loans	15.7	7.0%
Commercial Real Estate Loans	9.4	9.1%
Credit Card Loans	19.1	23.5%
Securities (AFS and HTM)	8.5	-na-
Trading & Counterparty	24.1	-na-
Other (1)	16.4	-na-
Memo: Purchase Accounting Adjustments	13.3	
Resources Other Than Capital to Absorb Losses (2)	74.5	
SCAP Buffer Added for More Adverse Scenario		
(SCAP buffer is defined as additional Tier 1 Common/contingent Common)		
Indicated SCAP Buffer as of December 31, 2008	46.5	
Less: Capital Actions and Effects of Q1 2009 Results (3)	10.9	
Other Capital Actions (4)	1.8	
SCAP Buffer	33.9	
(1) Includes other consumer and non-consumer loans and miscellaneous commitments and obligations.		
(2) Resources to absorb losses include pre-provision net revenue less the change in the allowance for loan and lease loans.		
(3) Capital actions include completed or contracted transactions since Q4 2008.		
(4) Capital benefit from risk-weighted assets impact of eligible asset guarantee.		
Note: Numbers may not sum due to rounding.		
Source: Federal Reserve (May 7, 2009).		

On the other hand, another government report highlighted the moral hazard concerns relating to the stress test under the SCAP. It pointed out that some saw the focus of SCAP on BHCs with more than \$100 billion in asset size as a formal demarcation of too-big-to-fail. The report also expressed that this focus of the SCAP created an impression that the federal government would protect the 19 BHCs at least for the duration of the financial crisis due to their size (FCIC 2010).

Figure 3: SCAP Results

Firm	Additional Capital Required
Bank of America	\$33.9 billion
Wells Fargo	\$13.7 billion
GMAC	\$11.5 billion
Citigroup	\$5.5 billion
Regions Financial Corp.	\$2.5 billion
SunTrust Banks	\$2.2 billion
Morgan Stanley	\$1.8 billion
KeyCorp	\$1.8 billion
Fifth Third Bank	\$1.1 billion
PNC	\$0.6 billion
American Express	Adequate
Bank of New York Mellon	Adequate
BB&T	Adequate
Capital One	Adequate
Goldman Sachs	Adequate
JP Morgan Chase	Adequate
MetLife	Adequate
State Street	Adequate
U.S. Bancorp	Adequate

Source: Federal Reserve (May 7, 2009).

This concern was somewhat seen in rating agencies' practice of upgrading the largest banks based on their access to extensive support from the federal government in 2009. For example, Moody's upgraded ratings for deposits and senior debt issued by the six largest U.S. banks, based on its expectation of "a very high probability of systemic support" for such banks from the U.S. government (FCIC 2010). Moreover, the Wall Street Journal reported that Standard & Poor's gave a rating upgrade to Citigroup; the agency added that it would have been rated four notches lower with no government assistance. On the other hand, Standard & Poor's downgraded a Citibank subsidiary, Citibank Korea Inc., in its stand-alone rating because it felt that there was "uncertainty" about whether the U.S. government wanted Citigroup providing additional support to noncore overseas affiliates (Eavis 2009).

3. Capital Assistance Program (CAP)

If the SCAP test indicated a bank needed more capital, the Treasury would provide the additional capital buffer through the CAP in the form of convertible preferred securities should the bank be unable to raise enough capital through private sources. These convertible preferred holdings would be convertible to common equity "if needed to retain the confidence of investors or to meet supervisory expectations regarding the amount and composition of capital" (Treasury White Paper). The Treasury offered the CAP to all banks and qualifying financial institutions, unlike the SCAP discussed above which was limited to the 19 largest BHCs. BHCs had six months to raise additional capital, but could apply to the CAP immediately after the publication of the SCAP results and delay actual funding for the six months while the firms raised as much private capital as possible.

Qualifying financial institutions (QFIs) were eligible to apply to the CAP. QFIs included BHCs, financial holding companies, insured depository institutions, and savings and loan holding companies, that were organized and operating in the United States and deemed viable by the appropriate federal banking agency. Financial institutions controlled by foreign entities were ineligible (Treasury February 25, 2009).

Design of CAP

Terms and conditions of the CAP included the following:

- Capital provided under the CAP were preferred security that was convertible into common equity and carried a 9% dividend yield;
- After seven years, the security would automatically convert into common equity if not redeemed or converted before that date;
- If economic conditions proved worse than expected firms could convert, with approval from their regulator, Treasury capital into common equity at a conversion price set at a 10% discount from the firm's stock price as of February 9, 2009;
- The instrument was designed to give banks the incentive to replace the government-provided capital with private capital as quickly as possible;
- With supervisory approval, banks were able to request capital under the CAP in addition to their existing Capital Purchase Program (CPP) preferred shares, and were allowed to apply to exchange the existing CPP or Targeted Investment Program preferred shares for the new CAP preferred security;

- As was the case with other capital injection programs discussed above, participants of the CAP were subject to the executive compensation requirements in line with the Emergency Economic Stabilization Act of 2008 (EESA) and subject to restrictions on paying quarterly common stock dividends, repurchasing shares, and pursuing cash acquisitions;
- As part of the application process, banks were required to submit a plan for how they intend to use the CAP capital to preserve and strengthen their lending capacity, and the Treasury was to make this plan public when the bank received the capital under the CAP; and
- Taxpayers were able to monitor the performance of banks receiving capital under the CAP by accessing online monthly reports submitted by the banks to the Treasury showing the status of their lending.

(Term Sheet for CAP).

Results of CAP

After the Fed released the results of the SCAP, ten firms collectively needed to add \$75 billion to reach their SCAP capital buffer targets (FRS May 2009). Nine of those banks were able to fulfill their additional capital needs privately. Only one firm, Ally Financial (formerly GMAC), required public capital to meet its SCAP requirements. However, the firm received funding through the Automotive Industry Financing Program, and not the CAP (OFS 2010).

Ultimately, the Treasury did not receive any applications for the CAP, and the program closed on November 9, 2009. OFS viewed this as an indicator of the effectiveness of the SCAP, as well as other government efforts in responding to the financial crisis. (OFS 2010).

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