

**REMARKS**

**BY**

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**BEFORE THE**

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**“THE STRESS TEST PROGRAM ONE YEAR LATER – SUPERVISORY LESSONS LEARNED”**

I am very pleased to be with you today, and very grateful to the Federal Reserve Bank of Richmond for organizing such a high caliber symposium. I am especially pleased to be here for this year’s symposium, instead of last year’s. It may be hard to remember how fragile the banking system and financial markets seemed in early 2009. Last year at this time, we were in the final stages of the stress test – or more formally, the Supervisory Capital Assessment Program that came to be known as SCAP. And that’s what I would like to talk about today: what has happened since the release of the SCAP results, and some of the lessons we have learned.

SCAP was launched at a time of extraordinary uncertainty. The first wave of TARP preferred stock investments and extraordinary TARP assistance had achieved only temporary stability. Many markets had virtually shut down; banks were facing unknown but possibly very large losses; and ordinarily reliable funding sources were tenuous. As policymakers, we knew we had to act more systemically to address the deep and lingering concerns about our largest financial institutions. But there were many possible responses on the table, none of them obviously best, and some of them very controversial. Indeed, if underlying problems at some

large institutions were as deep as some believed, there lurked the very real possibility of some form of nationalization.

Led by the new Administration's Treasury Department in early 2009, with active participation from the Federal Reserve, the OCC, and the FDIC, policymakers considered a range of options, with much initial focus on proposals for the government to purchase so-called "toxic assets" from banks. During that process, Secretary Geithner's idea for some type of publicly administered stress test quickly and clearly emerged as a key component for the emerging plan as a way to address the deep uncertainty about financial institutions' condition. And although it was not the most prominent of the options put forward when the Treasury Department unveiled its plan, the stress test proved to be the most significant and successful policy proposal of the new Administration to address the financial crisis.

That did not happen right away, however. When the stress test was first announced, it actually increased uncertainty and made things *worse*. That was because it took time to execute, which left a period of almost three months when markets simply waited and fretted. The test came to be perceived as an assessment of which institutions would live and which would die, and for some, which might be nationalized. The financial press speculated about what the results might show; analysts ran their own shadow stress tests based on imperfect information; and commentators engaged in poorly informed discussions about whether, for example, the stress tests were sufficiently severe. In the meantime, in advance of results, policymakers said very little to calm widespread fears. You may remember that this was the time when a number of financial stocks reached record lows, and the stock market as a whole reached its nadir for the crisis.

But then the results were released in early May, and what happened next was truly astonishing. Markets believed that the test was credibly severe, and the veil of extreme uncertainty was lifted. The resulting capital needs identified by the test, though significant, were perceived as capable of satisfaction through investment by the private sector, rather than by the government through the TARP program. With that conclusion, private capital markets opened wide, and much to the delighted surprise of policymakers, SCAP banks with identified common equity needs were able to raise that capital remarkably quickly. The nationalization discussion faded.

Banks were able to further bolster their capital positions during the year through retained earnings. This was combined for some with significant additional raises of common equity that were required as a condition for repayment of TARP preferred stock.

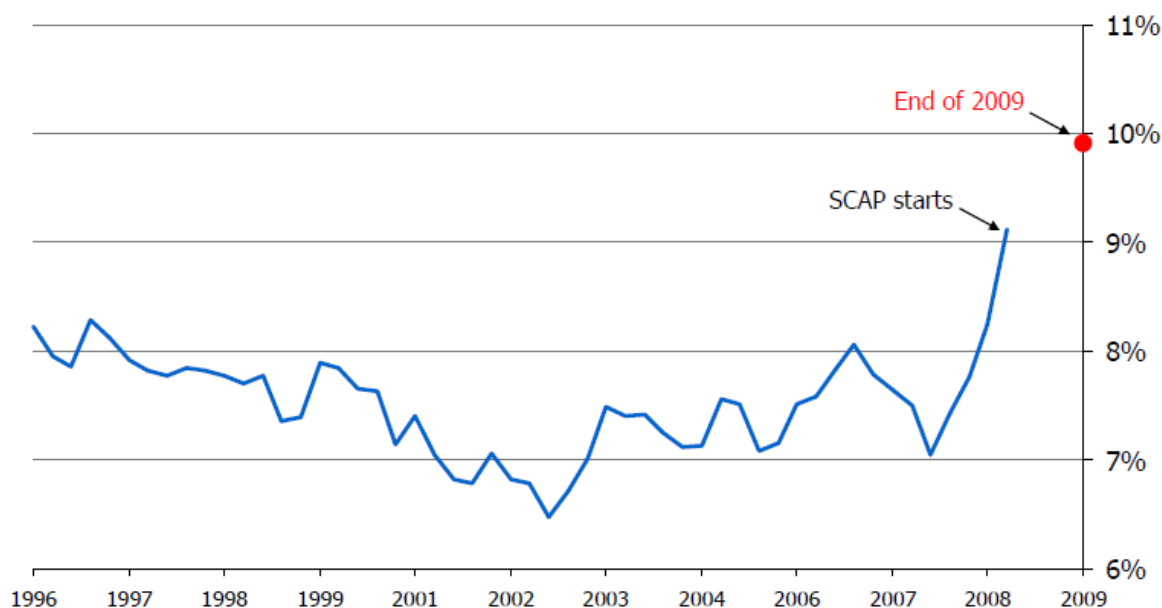
As a result, just one year later, most large U.S. banks have very healthy levels of capital, levels that are high by recent historical standards. You can see that from this chart showing the average Tier 1 capital ratio for large banks (Chart 1).<sup>1</sup>

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<sup>1</sup> Chart 1 presents data for the 15 largest U.S. bank holding companies in each year.

## CHART 1

### Average Tier 1 capital ratio for large banks



Source: Consolidated Financial Statements for BHCs - FR Y-9C

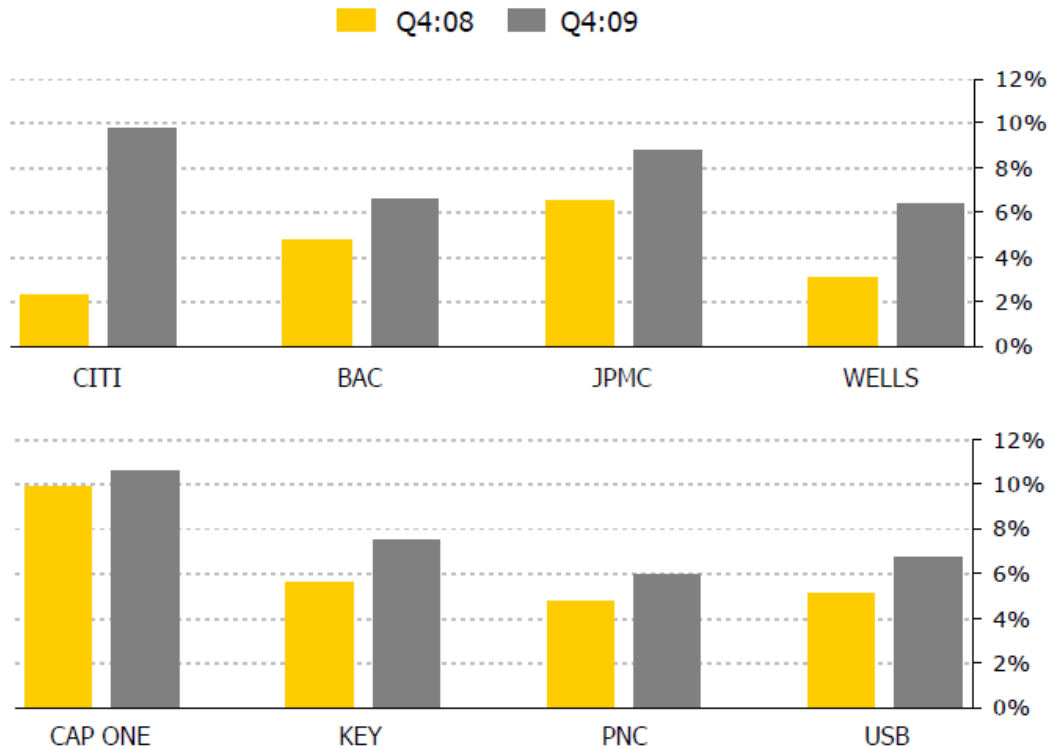
Perhaps more important, individual banks that were part of the SCAP exercise have added substantial amounts of higher quality common equity capital. This second chart (Chart 2) shows, for eight SCAP banks that have the OCC as primary bank supervisor, how the Tier 1 common ratio at the end of 2009 – on the right for each bank – compares to the pre-SCAP capital of one year earlier, on the left.<sup>2</sup> As you can see, every one of these large banks increased its Tier 1 common ratio, in some cases very substantially. Alongside that high capital, these banks

<sup>2</sup> For Chart 2, the OCC computed “Tier 1 common” capital as Tier 1 capital less non-common elements of Tier 1, including perpetual preferred, mandatory convertible preferred, minority interested in consolidated subsidiaries, and other restricted core capital elements.

significantly increased loan loss reserves, with most banks meeting or exceeding in advance the levels SCAP targeted for the end of the two-year stress period.

## CHART 2

### Tier 1 common ratio (as percent of risk-weighted assets)



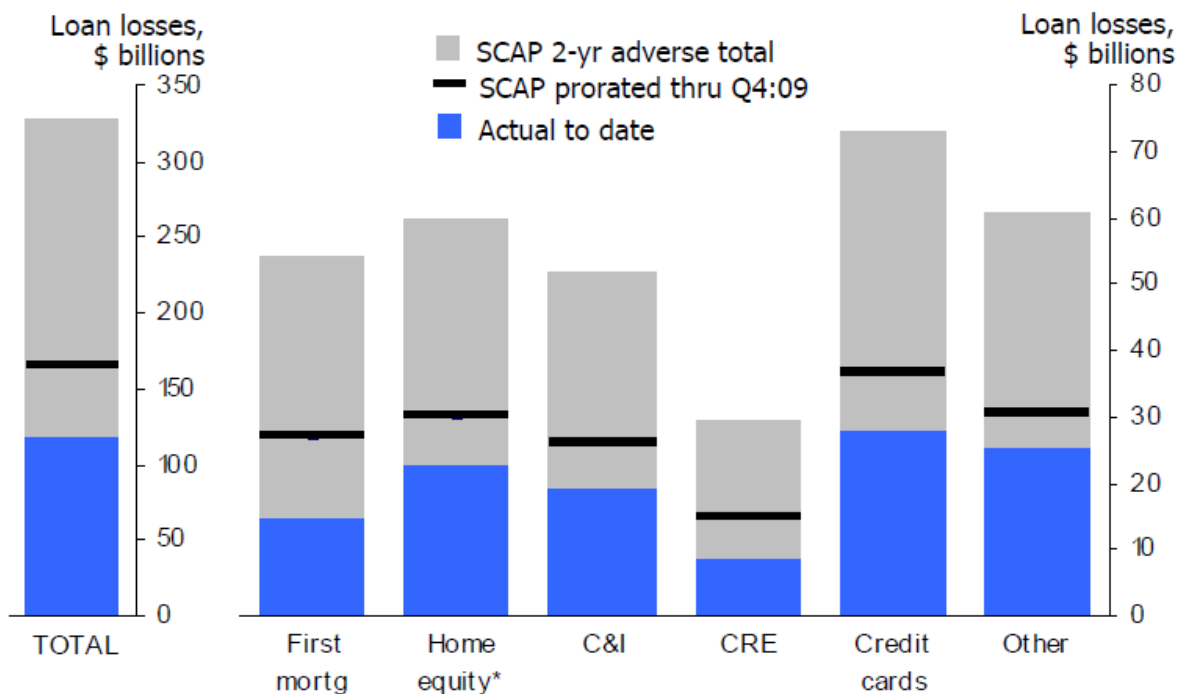
Source: FR Y-9C (OCC calculations for Tier 1 common)

These capital and reserve buffers were intended to withstand the increased losses and reduced revenues embodied in the “more adverse scenario” described in the stress test. But thankfully, the reality of what has actually occurred in the first year of the two-year stress test – we’re now more than halfway through – has been far more benign than the adverse scenario. To illustrate, consider the performance of the eight firms that had the OCC as primary bank supervisor. This “thermometer” chart (Chart 3) shows how the realized levels of losses for various types of credit at those firms as a group compare to the assumed losses under SCAP,

based on the most recently available data (as of year-end 2009). Halfway through the stress period, the lines across the thermometers show the halfway point in stress losses, that is, what the total losses would be if we assumed that half of the stress losses actually occurred in the first half of the stress period. On that basis, as you can see, actual losses have been far lower than projected stress period losses, at least on an amortized basis. While it is always possible that actual losses could be much greater in the latter part of the two-year stress period, the longer we go without evidence of that trend, the more valid it is to use amortized losses as a reasonable way to assess results.

### CHART 3

**Actual loan losses to date vs. SCAP adverse loss projections**  
Totals for 8 firms



Sources: SCAP documentation; FR Y-9C

Note: \*Includes Junior lien mortgages. 8 firms are BOA, Cap One, Citi, JPMC, KeyCorp, PNC, USB and Wells Fargo. Numbers may not sum due to rounding. CRE includes nonfarm, nonresidential mortgages, multifamily mortgages, and construction loans.

Applying this same type of analysis to the other side of the ledger (literally), the depressed revenue assumptions in the SCAP adverse stress scenario are not playing out either. In fact, banks' pre-provision net revenues have been robust, and on an amortized, aggregate basis are running well ahead of the levels used for SCAP.

Taken together, building a strong buffer in capital and reserves to absorb possible net losses that seem increasingly unlikely to occur, the SCAP banks have substantially fortified their balance sheets for the future.

Now, I know we have not yet made it to full recovery, or even to the end of the two-year period covered by SCAP. But we have successfully navigated some very stormy seas already, an outcome due, at least in part, to the SCAP stress tests. So this would seem an appropriate time to step back and assess, at least based on the record thus far, what we can about the SCAP experience.

### **HOW SCAP WORKED**

Let me begin by describing the stress test process in a bit more detail. In the initial stages, the agencies worked on specifying future stressful environments in terms of key macroeconomic variables, drawing on the macroeconomic expertise of the Federal Reserve. Most of the focus was on the "more adverse" scenario.<sup>3</sup>

Roughly in parallel with that macro work, the agencies developed ranges of stress losses for different categories of bank credit exposures, expressed as "indicative" ranges of loss rates. These loss rates were intended to be broadly consistent with the macro variables, although they were not constructed directly from the macro stress scenario. In late February, we provided the macro scenarios and the indicative loss ranges to 19 large financial institutions, asking them to

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<sup>3</sup> Under the "more adverse" scenario, the assumption was that GDP would fall by 3.3 percent the first year, then rebound slightly the second year; the unemployment rate would average 8.9 percent the first year, then rise to 10.3; and house prices would drop by about 30 percent during the two-year stress.

apply the scenarios to their own portfolios and report the results to their supervisors. More details are in the Federal Reserve Board's white paper explaining the design and implementation of SCAP.<sup>4</sup>

Bank supervisors then pursued an active supervisory dialogue with the banks throughout their implementation of the stress analysis, answering questions and providing clarifications to refine methods and estimates. The intensity of that dialogue increased once the banks submitted their results, and supervisors evaluated those submissions to reach preliminary conclusions about the condition of each bank.

Finally, we discussed the results and conclusions with the senior management of the firms, and discussed options for strengthening their ability to absorb potential losses where necessary. Banks had to demonstrate to supervisors that, even if they suffered the high losses and low revenues of the stress scenario, and built loan loss reserves appropriate for that stressed credit environment, they could come out the other end of the two-year period with strong capital – capital that would exceed regulatory minimums by a comfortable margin. Setting the size of that buffer was an important SCAP design decision – set the bar too high, and everyone fails; set it too low, and the test lacks credibility.

These discussions were closely followed by one of the most unusual elements of SCAP as a supervisory exercise: public disclosure of the analysis and its results. First out was the methodology paper I mentioned earlier, explaining how the stress analysis was done. A week or so later came the results, both in the aggregate and with some degree of granularity by bank and type of credit. The results were interpreted, quite correctly, as showing that the large banks covered by SCAP were well positioned to be able to continue operating and providing credit

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<sup>4</sup> Board of Governors of the Federal Reserve System, *The Supervisory Capital Assessment Program: Design and Implementation*, April 24, 2009.



even if the economic environment became significantly worse than generally expected. In some cases they needed to take steps to improve the quantity and quality of their capital, and bank management offered credible plans to do so.

Based on the results of the stress tests and the capital plans under SCAP, we – and the financial markets – developed a high degree of comfort that, even if conditions deteriorated much more than was reasonably expected, our major U.S. banking organizations not only would remain solvent, but would be able to maintain their central role in the U.S. financial system and support economic recovery.

### **LESSONS LEARNED**

With 260 days remaining in the two-year period covered by SCAP, capital and reserves appear sufficient to withstand the stresses portrayed in the adverse stress scenario, while revenues have been stronger and credit losses significantly lower than those assumed in that scenario. The remarkable result is this: just one year after the nadir of public confidence in our financial system, the balance sheets of many large banks are in considerably better shape, and confidence has returned. SCAP demonstrated that a systematic, horizontal approach to stress testing can be practical and successful.

So, stepping back, what lessons can we take away from the SCAP experience? Given the time pressure and resource constraints under which SCAP was developed and executed, it stands to reason that there are things we might do differently. I think we should take time in the coming months to reflect on the SCAP approach. Did we go through the best process to develop the details of the macro scenario? Did we choose the right level of granularity? Was a two-year horizon the right choice? Did we use appropriate methodologies to translate scenarios into bank

impact, and to assess bottom-line results? More generally, we need to ask, what are the takeaways for the way we conduct supervision, both now and in the future?

As a first step, we should assess the stress test as a stress test. I don't mean we should ask whether the real world ended up looking like the "more adverse" scenario, because that was never the intent of the stress scenario. What we should ask is whether the scenario satisfied the fundamental standard that applies to all stress tests, that is, was it "plausible but severe"?

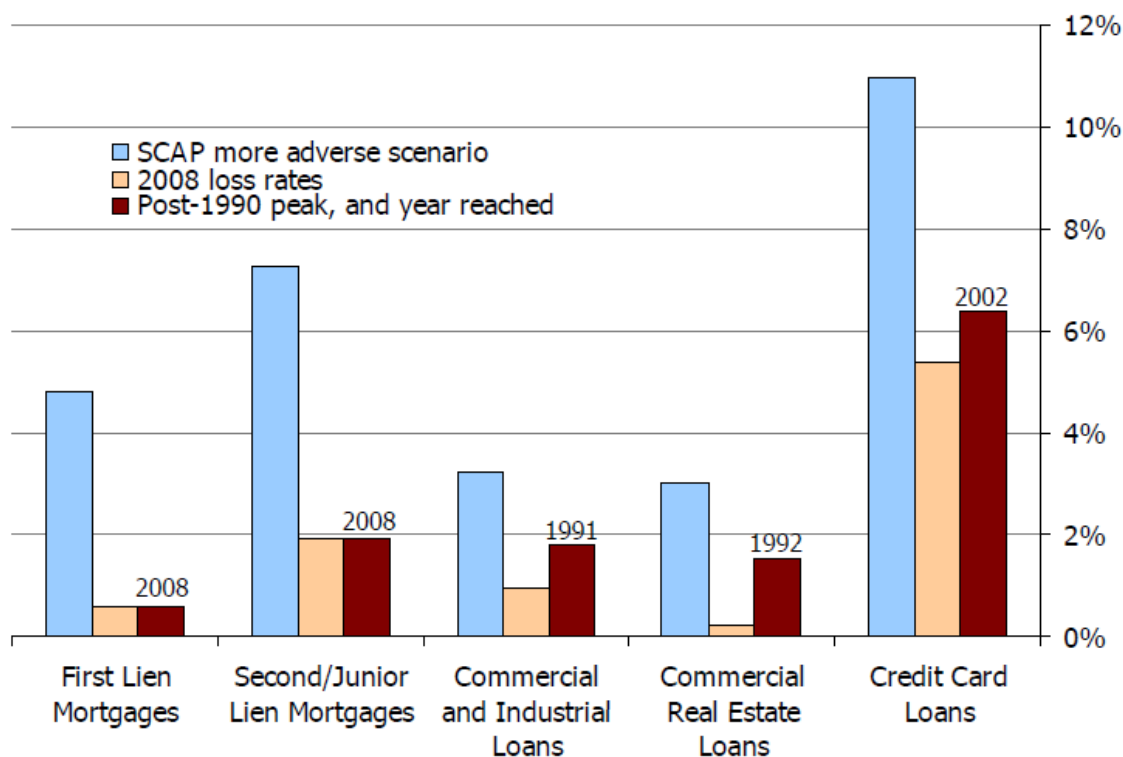
Let's take severity first. Just how severe was the SCAP stress test? In my view, quite severe. Some have argued that the stresses embodied in the macro variables – for example, the peak unemployment rate – don't look so stressful in light of subsequent developments. That may be true as far as it goes, but in the end, is not really very relevant to assessing how stressful the actual scenario was for the banks. Instead, what really matters is the severity of the loss and revenue assumptions used in the test. In that context, take a look at the loss rates imposed on the various types of credit (Chart 4). The tallest bars aggregate individual bank loss results under SCAP "more adverse" assumptions and compares them to the highest losses we've seen over the past 20 years (for which we have comparable data) as well as the loss rates for 2008, the year preceding SCAP.<sup>5</sup> If you think the SCAP loss rates look high in this context – then I agree with you.

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<sup>5</sup> Loss rates under the "more adverse" scenario are aggregated for all 19 institutions covered by SCAP.

## CHART 4

### Stress loss rates vs. 2008 and previous historical peaks



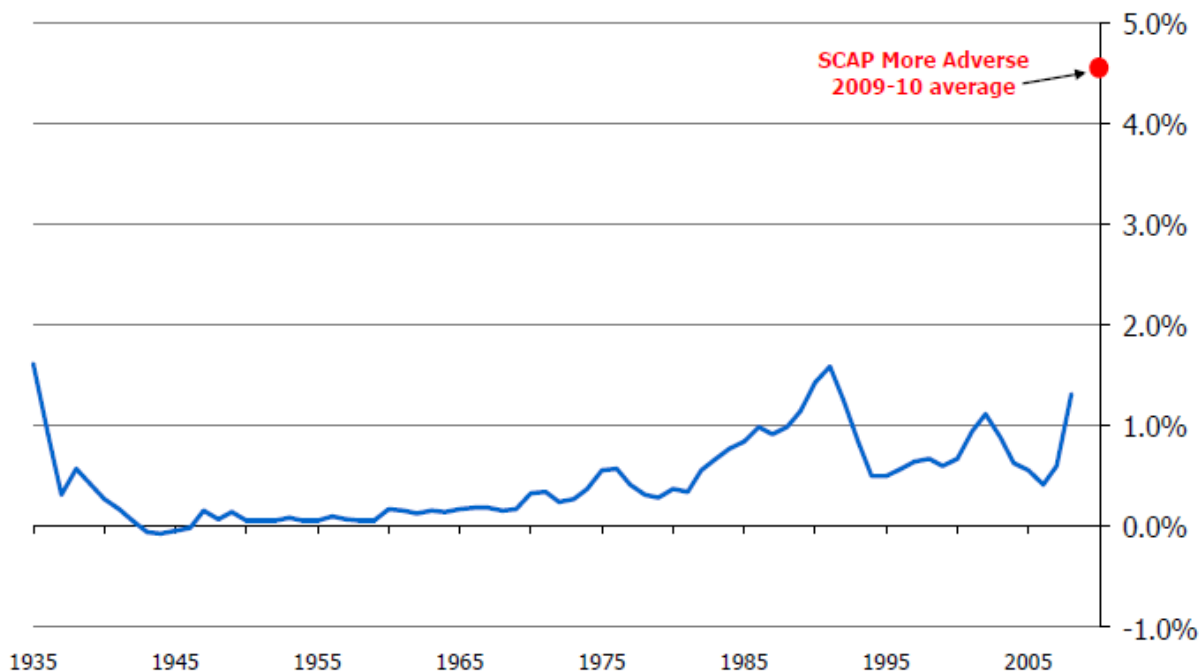
Sources: SCAP documentation; Call Reports (for 2008 and post-1990 peak values)

While the chart shows that the loss rates applied in SCAP were indeed severe, the stress was even more severe than this might suggest, for two reasons. First, the post-1990 highs on the chart were only for a single year, but we assumed the SCAP rates would continue for two full years. Second, these historical highs occurred at various times for different types of credit; for example, commercial real estate or CRE loan-loss rates hit their high in 1992 at the end of the last major banking crisis, whereas credit card loss rates hit that high in 2002, when CRE loss rates were only 15 basis points. Under SCAP, however, we assumed peak stress levels all hit at the same time, for the same two-year period. As a result, the implied overall credit loss rate was

extremely severe. This chart (Chart 5) shows the overall SCAP loss rate compared to the historical record of charge-off rates for commercial banks.<sup>6</sup> Looking at this graph, you have to ask not whether this was a severe enough test, but whether it met the second half of the fundamental stress test standard: was it plausible? My own answer is that it was plausible, although maybe near the outer edge of what's plausible.

## CHART 5

### Net charge-off rate for commercial banks 1935-2008 and the SCAP "more adverse" scenario



Sources: FDIC; SCAP documentation

One clear lesson from SCAP may seem obvious: good stress scenarios – “severe but plausible” – are key to good stress tests, and both halves of that phrase are important. But what’s tricky – and what SCAP highlighted – is that this is a very subjective standard. Sound, well

<sup>6</sup> Chart 5 presents aggregate data for all commercial banks through 2008, and SCAP calculation for 19 institutions.

informed economic and financial judgment plays a huge role in gauging both severity and plausibility. Indeed, to a large extent the results are determined by the choice of scenario, so scenario-based stress testing should never be a mechanical process.

It is common to think about scenarios as determined by the general macro setting that is applied in the test. In my view, specifying the general macro setting for a scenario is valuable, informative, and necessary, but it is far from determinative. Unfortunately, given the current state of knowledge and modeling, it turns out to be very difficult to establish a tight relationship between macro factors and the variables that matter at the micro or firm level, like loss rates. The macro variables give a sense of whether the loss-rate assumptions strike the right balance between severity and plausibility and are grounded in reality. But ultimately it is the loss rates that matter. For SCAP, a lot of good work was done on the macro side, but in the end, a wide range of loss rates could have been consistent with the macro scenarios, and many different macro scenarios could have been consistent with the loss rates.

Another takeaway goes to the limits of stress tests as a tool of supervision. Stress tests like SCAP, with uniform assumptions applied across a broad set of comparable firms, provide a useful horizontal perspective that is otherwise hard to achieve. However, this comparability comes at a price; specifically, it limits the ability to tailor stress-test details to the idiosyncrasies of individual institutions. As anyone who has done institutional stress testing for risk management will tell you, that kind of tailoring is extremely important. Modern financial institutions are complicated firms, and the finer details of their portfolios and business lines strongly influence the impact of a given set of stresses. Thus, broad horizontal stress tests cannot and should not be seen as a replacement for stress tests tailored to individual institutions. And

we must particularly guard against the possibility that they might replace stress tests designed and conducted by the institutions themselves as part of sound risk management.

The importance of firm-level details points toward yet another lesson: the critical contribution of bank examiners to the design and implementation of stress tests. My views on this won't surprise you, given the vantage point from which I participated in SCAP. Stress testing often starts with a high level analytical framework based primarily on data and economic assumptions, which is part of the reason we want our OCC Economics staff closely involved in the design and execution of supervisory stress tests. However, it is my strong view that supervisory stress tests cannot be truly effective if they are purely analytical exercises executed at some distance from the firms being assessed. As I have said, the largest banks are very complex institutions, and at the OCC, we gain crucial insights into these banks through the daily, on-site presence of our teams of seasoned, professional examiners. Our approach to supervisory stress testing relies heavily on input from those examiners; without it, the results of stress tests are much less useful.

Turning to lessons for the design of stress tests, one takeaway from SCAP is that it is important to be clear up front about our objectives and realistic about what can be accomplished. Stress tests can and do serve many different purposes in banking and finance, so the objectives in any specific instance can't just be taken as obvious. Initial plans for SCAP focused largely on assessing potential credit losses for various categories of loans, which were the main supervisory concern. But SCAP ultimately became much more ambitious. In its final form, the program aimed to comprehensively assess the ability of firms to survive a highly stressed scenario, rather than just assess the extent of potential loan losses.

Now, there is nothing wrong with being comprehensive; in fact, an overall assessment of the financial health of a bank is central to supervision, and it's what we do. But is a single stress test the right tool for that job? The ambitious scope of the SCAP tests made the exercise much more difficult, both for banks and for bank supervisors. Test specifications had to cover a wide swath of bank operations: details like provisions for loan loss reserves, the payment of dividends, and the impact on other non-credit-related parts of the business. Many of these features were not specifically of interest, and in some cases not even material to the overall result, but were pursued in order to be comprehensive. This introduced a number of ad hoc and imprecise elements into SCAP, in areas where the state of practice is not very advanced and where more research and development would be needed to make comprehensive stress tests like this credible enough to be used regularly. In addition, bank information systems are not designed to aggregate information in this way on a regular basis. Much improvement is needed in these systems – another lesson learned from the tests – but until strides are made, comprehensive stress testing will remain very difficult.

More generally, while SCAP's comprehensive horizontal stress test proved to be just the right prescription for the unique and extraordinary uncertainty we faced last year, the issues I've just mentioned make me reluctant to begin conducting such tests routinely as the cornerstone of our supervision. Similarly, I think we should avoid thinking of stress tests as just a way to assess capital adequacy (or even as the preferred tool for doing that). Ask any risk manager, and he or she will tell you that one of the main benefits of stress testing is the focused dialogue it generates around risk-taking and risk appetite. I think that's the right general focus – for internal risk management and for supervisory stress testing.

Let me conclude with a few thoughts on the issue of disclosure. Transparency was a critical part of the success of SCAP, because it helped alleviate uncertainty about the viability of the largest banks at a time when that was the critical factor impairing financial stability. Does that mean we should always disclose the results of supervisory stress tests?

I think not. Routine disclosure of negative supervisory information – especially when that information is based on imperfect tests related to uncertain future events – could generate the type of confidence problems that it is our job as supervisors to prevent. That concern was outweighed in SCAP by two extraordinary factors. One was the critical need in the middle of the financial crisis to alleviate the exceptional degree of public uncertainty about banks' financial condition. The other was the unique presence of a backstop of public capital – the TARP funds that were already at the disposal of Treasury – to inject into any bank where the stress test revealed a capital deficiency too large for private capital markets to address. Were it not for the existence of this ready source of capital, disclosing results for individual firms would have been very risky and very possibly counterproductive. Since we will not in general have this kind of public backstop, I think we should not in general pursue this kind of transparency.

I think the best and most likely future use of supervisory stress tests will be as a supervisory tool, with confidential results; the public disclosure that was necessary for the unique circumstances of SCAP is not something we will be in a position to replicate in the future. I wouldn't rule it out completely, because it's possible that future conditions may again warrant full transparency, but I think those conditions will be rare. Of course, Congress may reach a different conclusion in financial reform legislation, but if so, I hope that regulators are provided adequate discretion to design stress tests going forward that are sensible and support, rather than potentially undermine, financial stability.



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In closing, they say you should learn from your mistakes and, in fact, there is substantial evidence from psychology that we learn more from failures than successes. But it is way less painful to learn from the things you get right. I hope some of my “lessons learned” from the stress test have struck a chord with some of you. But I don’t want even my reservations and caveats to obscure a larger point: SCAP proved to be an extremely successful exercise that helped us turn the corner on some of the most significant financial problems we have ever faced. Through SCAP, we strengthened large banks’ capital and reserves to withstand very severe stresses, although those stresses haven’t materialized. As a result, we now have the comfort of knowing that our most systemically important firms are in much stronger condition. Maybe we would have been able to get here through some other policy action, although it is hard for me to see what that would have been, or how it could have been accomplished so quickly. The SCAP stress test, and the ensuing capital increases it made possible, are the main reason we can all sit here today, feeling far less anxious than we would have last year at this time.

Thank you very much.