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Hirtle, Beverly; Schuermann, Til; Stiroh, Kevin

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Macroprudential supervision of financial institutions: Lessons from the SCAP

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Macroprudential Supervision of Financial Institutions: Lessons from the SCAP

Beverly Hirtle
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Kevin Stiroh

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Macroprudential Supervision of Financial Institutions: Lessons from the SCAP

Beverly Hirtle, Til Schuermann, and Kevin Stiroh

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Abstract

A fundamental conclusion drawn from the recent financial crisis is that the supervision and regulation of financial firms in isolation—a purely microprudential perspective—are not sufficient to maintain financial stability. Rather, a macroprudential perspective, which evaluates and responds to the financial system as a whole, seems necessary, and the ongoing discussions of regulatory reform in the United States underscore this view. The recently concluded Supervisory Capital Assessment Program (SCAP), better known as the bank "stress test," is one example of how the macro- and microprudential perspectives can be joined to create a stronger supervisory framework that addresses a wider range of supervisory objectives. This paper reviews the key features of the SCAP and discusses how they can be leveraged to improve bank supervision in the future.

Key words: bank stress test, macroprudential, SCAP, bank supervision

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Hirtle: Federal Reserve Bank of New York (e-mail: beverly.hirtle@ny.frb.org). Schuermann: Federal Reserve Bank of New York (e-mail: til.schuermann@ny.frb.org). Stiroh: Federal Reserve Bank of New York (e-mail: kevin.stiroh@ny.frb.org). The authors thank Tobias Adrian, Mark Flannery, Richard Herring, Robert Litan, João Santos, and Grace Sone for helpful comments and suggestions. The views expressed in this paper are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

I. Introduction

A fundamental conclusion from the recent financial crisis is that the supervision and regulation of financial firms in isolation – a purely microprudential perspective – are not sufficient to maintain financial stability. Rather, a macroprudential perspective that evaluates and responds to the financial system as a whole seems necessary, and the ongoing discussions of regulatory reform in the U.S. underscore this view.[1] The recently concluded Supervisory Capital Assessment Program (SCAP), better known as the bank "stress test," is one example of how the macro- and microprudential perspectives can be joined to create a stronger supervisory framework that addresses a wider range of supervisory objectives.

The goal of macroprudential supervision and regulation is to reduce the probability of distress for the entire financial system when that distress has the potential to adversely impact the real economy. This link incorporates a host of potential channels including interdependence and linkages among large financial firms through clearing and settlement systems, common exposures, collective or "herd" behavior, and market failures such as externalities or moral hazard, all of which have the potential to amplify shocks and spill over to the real economy. Supervisors then have an incentive to "lean against the wind" of broader destabilizing forces with counter-cyclical pressures. This approach takes the stability of both the financial system and the real economy as explicitly *endogenous* with respect to supervisory action, so supervisors have a clear objective to influence the path of the economy by acting on the banking system.

By contrast, microprudential supervision and regulation evaluate each firm independently and in isolation, largely without regard to spillover and feedback effects, and form the basis of traditional supervision and bank examination, e.g., the "supervisory review process" that constitutes Pillar II of Basel (BIS, 2001). Microprudential supervision's focus on the risk of insolvency or distress at an individual firm reflects goals such as protecting consumers and taxpayers (via the deposit insurance fund) and reducing distortions from the safety net. In this way, microprudential supervision takes the economy as given, and thus *exogenous* to the supervisory decision-making process.

[1] See Borio (2003, 2007) for earlier references, Acharya et al. (2009), Brunnermeier et al. (2009), Squam Lake Working Group (2009), and Adrian and Brunnermeier (2008) for recent academic contributions, and Bernanke (2009), Papademos (2009), Rosengren (2009), and Ryback (2006) for recent views from the supervisory community.

Prior to the recent financial crisis, many believed that the microprudential objective of strong individual institutions was sufficient to address what are now recognized as macroprudential goals related to financial stability. Discussions of regulatory reform that reflect the lessons of the recent financial crisis, however, have emphasized the linkages between the macro- and microprudential approaches, as well as the need for supervisors to understand and address areas of divergence. Supervisory actions may differ, for example, if systemic risk reflects market failures (in an economic sense) that can cause privately efficient outcomes to diverge from socially efficient ones; in that case, microprudential outcomes do not imply macroprudential ones.[2] Goodhart (2004), for example, argues that Japan in the 1990s was an example of banks that were individually strong but systemically weak in response to real estate shocks. Similarly, the recent subprime crisis shows the adverse, systemic impact of common exposures and positions that cumulate across firms that seemed *ex ante* to be individually well capitalized.

We believe that the SCAP had important features of macroprudential and microprudential supervision that contributed to its perceived success and that can be leveraged to improve supervision in the future. Table 1 provides a summary of key characteristics of the macro- and microprudential approaches and how they link to the SCAP.

From the macroprudential perspective, the SCAP was a top-down analysis of the largest bank holding companies (BHCs), representing a majority of the U.S. banking system, with an explicit goal to facilitate aggregate lending. The SCAP applied a common, probabilistic scenario analysis for all participating BHCs and looked beyond the traditional accounting-based measures to determine the needed capital buffer. The macroprudential goal was to credibly reduce the probability of the tail outcome, but the analysis began at the microprudential level with detailed and idiosyncratic data on the risks and exposures of each participating BHC. This firm-specific, granular data allowed tailored analysis that led to differentiation and BHC-specific policy actions, e.g., a positive identified SCAP buffer for 10 BHCs and no need for a buffer for the remaining nine.

The macro- and microprudential perspectives are both important, and they overlap with substantial complementarities. The ability to comprehensively aggregate positions and exposures across firms in a consistent way helps supervisors identify industry trends and concentrations to improve the macroprudential perspective. Conversely, supervisors can use the cross-sectional

[2] See Kambhu, Schuermann, and Stiroh (2007) and Kodres (2009) for more on the market failure view of systemic risk. These market failures (in an economic sense) include asymmetric information, externalities, principal-agent problems, and moral hazard, all of which can drive privately efficient actions to be socially inefficient.

perspective to identify best-practices and weaknesses in risk management and to benchmark individual BHCs, which will improve microprudential supervision. The comprehensive nature of the SCAP also brought together multiple, independent assessments of potential vulnerabilities from supervisors, economists, accountants, and legal professionals in a way that built upon the traditional supervisory process.

The SCAP was undertaken in a unique period of heightened global and firm-specific uncertainty that required both a macroprudential and a microprudential response. By looking at the broad needs of the financial system and the specific needs of individual firms, the SCAP provided valuable information to market participants, and BHCs responded with substantial actions to improve capital including an increase of more than $77 billion in Tier 1 common equity by the 10 BHCs needing an additional SCAP buffer.[3] Market observers will likely continue to debate whether this type of stress analysis needs to be repeated, and we believe there are broader lessons for supervision and regulation.

II. Overview of the SCAP

The SCAP was a supervisory exercise conducted by U.S. federal banking supervisors from February to May 2009 to assess whether large, U.S. BHCs held sufficient capital to continue to lend to creditworthy borrowers even under a more adverse macroeconomic conditions than were expected at that time.[4] Any BHC identified as needing an additional capital buffer under the SCAP would be required to raise additional capital, either in public markets or by issuing mandatory convertible preferred securities via the U.S. Treasury's Capital Assistance Program.

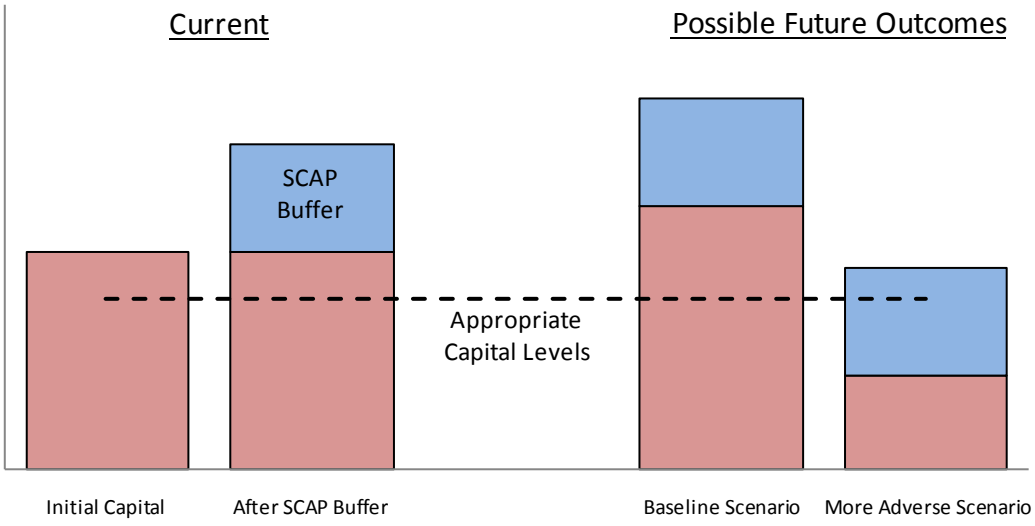
The goal of the SCAP was clearly macroprudential in nature. By prepositioning capital in the largest banks so that they could confidently continue in their role of credit provision and financial intermediation even in the face of a more adverse (i.e., not expected yet distinctly possible) outcome, the SCAP was explicitly designed to try and change macroeconomic outcomes. We illustrate the prepositioning idea in Figure 1, where the bar on the left represents the level of capital before adding the SCAP buffer. After adding the buffer, the bank's capital initially rises to the level illustrated in the second bar. The two bars on the right show capital levels under two different future economic outcomes, with the key insight that the bank would remain appropriately capitalized (right bar) with the ability to lend even if the more adverse scenario were realized. The very act of pre-positioning capital

[3] Board of Governors of the Federal Reserve System. Press Release dated November 9, 2009.

[4] The supervisors who conducted the SCAP were the Federal Reserve, the Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation. See Board of Governors of the Federal Reserve System (2009a and 2009b) for a full description of the SCAP exercise and results.

against a stress scenario could reduce the likelihood of that adverse outcome. Of course, if the more likely, more benign scenario were realized, banks would enjoy large capital surpluses.

Figure 1: SCAP Buffer Helps Ensure Appropriate Bank Capital in the More Adverse Scenario



All domestic BHCs with assets exceeding $100 billion as of December 31, 2008 were required to participate in the SCAP. These 19 BHCs were asked to project losses, revenues, and loan loss reserve needs over a two-year, forward-looking horizon under two economic scenarios provided by the supervisors. These scenarios were a "baseline" scenario that reflected consensus expectations for the economy as of February 2009 and a "more adverse" scenario that assumed substantially worse macro-economic performance than the baseline. The participating BHCs were provided with guidance about how to make the loss and revenue projections, importantly including a set of "indicative loss rate ranges" that reflected the supervisors' view of likely loss rates under each of the economic scenarios.

The initial projections submitted by the SCAP BHCs were extensively reviewed and adjusted by supervisors. Supervisors collected significant amounts of confidential data about the SCAP BHCs' loan and securities portfolios, trading accounts, derivatives positions, and revenue and expense sources. Using these data, supervisors were able to develop independent estimates of losses and revenues for the participating firms. The final SCAP projections of losses, revenues, and reserve needs were developed through review and analysis by more than 150 senior supervisors, examiners, economists, financial analysts, and experts in law, accounting, and regulatory capital at the supervisory agencies.

These final projections were used to calculate each BHC's pro forma capital position as of year-end 2010 under the more adverse scenario. These capital positions were then compared to benchmarks intended to assess both the amount and composition of capital. In particular, any BHC with pro forma Tier 1 capital of less than six percent of risk-weighted assets or Tier 1 Common capital of less than four percent of risk-weighted assets was deemed to need an additional capital buffer.

The SCAP projections suggested that the 19 BHCs would face nearly $600 billion of losses under the more adverse scenario, offset by $360 billion in net revenue less additional reserve needs. This translated to an additional capital buffer of $185 billion across the 19 BHCs, with 10 of the 19 firms requiring additional capital and nine having no additional capital need. After factoring in capital actions taken and realized performance during the first quarter of 2009, the final capital buffer was $75 billion. The participating BHCs were required to file capital plans with their supervisors, outlining how the buffer amounts were to be raised, and had until November 2009 to raise any additional capital needed. The BHCs' actions increased Tier 1 common equity by over $77 billion by that date for the 10 BHCs with a capital need.

III. The SCAP: Melding Macroprudential and Microprudential Supervision

The SCAP provides a useful case study of the complementarities between macroprudential and microprudential supervision. This section reviews the elements of the SCAP that made it a successful melding of the two and highlights specific attributes that could be used to guide future implementation of macroprudential supervision of individual financial institutions. These elements include comprehensive coverage of participating BHCs; use of a consistent framework across firms; use of multiple, independent estimates of loss and revenue, rather than a single model or approach; a blending of expertise and perspectives within the team that designed and carried out the exercise; transparency about the process and results; and a clear set of goals and resulting policy actions that were articulated in advance and well-understood by all parties.

A. Objective of SCAP in context of supervision

The SCAP was explicitly designed with the macroeconomic goal of maintaining aggregate lending and credit provision capacity while providing information about the health of specific firms. By late 2008, existing regulatory capital standards no longer provided a credible metric for capital adequacy given the looming financial and economic threats. By design, the specifications of the SCAP were significantly more stringent than existing capital standards. The SCAP required banks to have sufficient capital to make it through a more adverse than expected (at least as of February 2009) two-year

macroeconomic scenario, and to have sufficient reserves available to cover expected losses for the third year, all while maintaining lending capacity. Banks could not shrink their way to "passing" the stress test.

A key objective of the SCAP was to curb the negative feedback loop of losses, actual and fearfully anticipated, curbing credit provision, which could in turn curtail real macroeconomic activity, making banks yet more reluctant to lend into a rapidly declining economy. By pre-positioning capital in the BHCs before the losses were realized and in sufficient quantity to withstand a severe macroeconomic scenario, the goal was to make the realization of that scenario less likely. The 19 BHCs that were required to take part in the SCAP accounted for two-thirds of the assets and more than half the loans in the U.S. banking system at the time of the exercise (Board of Governors of the Federal Reserve System, 2009a). Therefore, shoring up this set of institutions was designed to improve the health of the whole financial system. Moreover, the U.S. Treasury's Capital Assistance Program (CAP) provided the backstop for firms requiring a capital buffer, should they not be able to raise it in the private markets. Whatever the size of the hole the supervisors might uncover, resources were available to fill it. A macroprudential objective and scenario, executed at each and every firm in a microprudential manner.

B. Comprehensiveness

Consistent with the SCAP's macroprudential goals, the BHCs participating in the SCAP represented a comprehensive share of the U.S. banking system, both in size and scope. The set of participating SCAP BHCs was wide enough to cover the full range of financial services on offer by BHCs, from traditional lending to businesses and consumers, commercial and residential real estate, credit cards and auto financing, custody services, and securities and investment banking. The set of SCAP firms also included several that had recently become BHCs, including American Express, GMAC, Goldman Sachs, and Morgan Stanley.[5] This meant that the SCAP's coverage of key financial services and of large financial firms was more extensive than it would have been had the exercise been conducted during an earlier phase of the financial crisis. The set was also large enough to make robust cross-firm/peer comparisons, such as comparisons of firms with large trading and capital markets activities, of regional banking organizations, and of BHCs with large credit card portfolios. Many banks had portfolios with

[5] Goldman Sachs and Morgan Stanley were approved to become bank holding companies on September 22, 2008; American Express was approved to become a bank holding company on November 10, 2008; and GMAC was approved to become a bank holding company on December 24, 2008. (Board of Governors of the Federal Reserve System. Press releases dated September 22, 2008; November 10, 2008; and December 24, 2008).

exposures to similar geographies, similar businesses or property types, having made loans in the same years (vintage effects), and all faced the same SCAP scenario. This interplay of macro- and microprudential ensured consistency while accounting for firm-specific differences in underwriting, and risk and portfolio management.

In retrospect, while defining the set of participating BHCs solely by asset size was straightforward to implement and easy to explain, it may have been beneficial to consider other characteristics to ensure that smaller BHCs with important or unique roles in the financial system were included. Other characteristics – such as whether a firm had a large market share in a concentrated financial product or service market or its role as a provider of key infrastructure or payment and settlement services – could also have been considered. While there is likely significant overlap between such characteristics and asset size, consideration of a broader set of characteristics might have better served the SCAP's macroprudential goals. Including these firms might also have had microprudential benefits in the form of a larger peer groups for some institutions in the SCAP group.

The SCAP was also comprehensive in a microprudential sense because it assessed risk across the full range of the BHCs' portfolios and activities. The loss projections were based on a whole-firm view, rather than focusing on specific business line, risk exposures, or segment as in traditional horizontal examinations. Thus, the loss projections captured credit losses on the banking book, both loans and securities held for investment in the available-for-sale and held-to-maturity accounts; losses in the trading book from a severe market stress scenario, including the impact on derivative exposures as well as counterparty credit risk for the dealer banks; and losses associated with off-balance sheet positions and undrawn loan commitments. This comprehensiveness of potential losses within each BHC was essential to meet the policy objective of assessing the need for an additional capital buffer because capital supports the activities of the entire firm.

Not all risk types were covered by the SCAP. Notable omissions include operational risk, and funding and liquidity risk. To some extent, this reflects the quantitative nature of the SCAP, as these risk types are more difficult to quantify and describe in a single risk measure comparable in nature to the loss projections that form the basis of the SCAP. We should note, however, that funding and liquidity had to be explicitly considered in the projections of net revenue, for instance to compute net interest margins.

C. Consistency

A key linkage between the macro- and microprudential perspectives was that projections of loss and revenue both across the participating BHCs and across the business lines and portfolios within each BHC were made under a common set of assumptions about the future path of the economy. The macroeconomic scenario was defined by a relatively parsimonious set of indicators: GDP growth, the unemployment rate, and housing prices. The choice to define the scenarios in this parsimonious way was deliberate, in recognition that the same stressful macroeconomic environment could cause different types of stresses at different types of firms. So part of the exercise design was to ask the participating BHCs to identify the most relevant stress factors for them individually, rather than having supervisors "over determine" the set of relevant variables and perhaps exclude (or fail to stress sufficiently) some factor that might be important.

While a virtue in many ways, this openness inevitably led to some variation across BHCs in assumptions about specific macroeconomic and financial market factors that were not specified, such as equity index levels and the path of interest rates. This was corrected to some extent during the analysis and determination of the final SCAP projections, but one lesson learned is to consider carefully the balance between providing enough detail to ensure consistency across firms in the key risk factors and developing a manageable and credible scenario with plausible and consistent paths for the variables specified.

D. Multiple, Independent Estimates

The SCAP took place at a time of considerable uncertainty about the outlook for economic activity and about the underlying strength of the U.S. banking system and financial markets. As noted in the SCAP white paper (Board of Governors, 2009a), projecting losses and revenues for BHCs is especially challenging in such environments. The SCAP used multiple, independent estimates of losses and pre-provision net revenue (PPNR) as a way of addressing this challenge. In part, this approach reflects the general finding in the statistics literature that averaging over multiple forecasts usually provides a better estimate than any individual forecast (Timmermann, 2006). This is especially the case in the presence of structural breaks, which is not unlikely given the severity of the financial crisis (Pesaran and Timmermann, 2007).

More generally, using multiple estimates generated from different models and sometimes different data enabled the SCAP to bring multiple perspectives together and not just rely on a single view or approach. This differed somewhat from the traditional examiner-centric approach typically

employed in microprudential supervision that is focused heavily on firm-specific characteristics and management practices.

As a concrete example, the final SCAP loss estimates combined information from three distinct sources:[6] "top-down" estimates by economists from the supervisory agencies conducting the SCAP based on the agencies' view of likely industry-average losses under the baseline and more adverse scenarios; "bottom-up" estimates made by supervisors using proprietary data on loan portfolio characteristics supplied by the participating SCAP BHCs and risk models developed by supervisors; and "bottom-up" estimates made by the participating BHCs themselves using their internal data, models, and estimation techniques.

The top-down estimates incorporated a financial sector-wide view of aggregate potential loan losses under the macroeconomic scenarios, and provided an important benchmark against which to evaluate the aggregated "bottom-up" firm-level estimates. Similarly, having independent supervisory loss estimates meant that supervisors were not just reactive to the BHCs' estimates, but had their own independent view. This facilitated comparisons across institutions, helped enable supervisors to make relative risk assessments across firms, and provided an important perspective and leverage in discussions with the participating BHCs. More broadly, bringing together diverse, independent estimates allowed supervisors to make a more informed judgment about potential losses at each firm.

E. Diverse Perspectives

In a corollary to the advantages of using multiple, independent loss and revenue projects, the SCAP was also notable for the breadth of perspectives and expertise brought to bear in the design and implementation of the exercise and in the evaluation of its results. This multi-disciplinary approach has been highlighted in recent discussion of the possible future of U.S. supervision (Tarullo, 2009).

The SCAP team included senior supervisors, examiners with deep familiarity with the participating BHCs, economists, financial analysts, legal professionals, and experts in accounting, regulatory capital, asset pricing, securitization, and risk management from the three supervisory agencies that conducted the exercise. Given the scope of the exercise and the comprehensiveness of the assessment of risk at these firms, this cross-disciplinary expertise was needed to produce results that were credible to a diverse set of external constituencies and audiences.

[6] While this example focuses on loss estimates, the SCAP also used multiple estimates of pre-provision net revenue, including "top-down" supervisory estimates capturing industry-average responses to the two macro-economic scenarios and "bottom-up" estimates based on detailed information supplied by the participating BHCs.

For instance, detailed adjustments were made to estimated losses and pre-provision net revenue to reflect the impact of discounts taken by institutions on impaired loans acquired during mergers, as governed by accounting standard SOP-03-3. Similarly, risk-weighted assets were increased to reflect the impact of proposed changes to accounting standards for securitized, off-balance sheet positions. In both cases, accounting experts guided these decisions to ensure that the results reasonably reflected the likely impact of accounting standards on measured losses and revenue. By contrast, the SCAP teams opted not to incorporate the impact of changes in accounting guidance for recognizing "other than temporary impairment" (OTTI) in securities held in banks' available-for-sale portfolios. In this case, the cross-disciplinary judgment was that economic conditions under the more adverse scenario required a conservative interpretation of the firms' ability to hold these securities to maturity and thus to realize the benefits of the greater latitude incorporated in the new accounting guidance.

F. Transparency of Process and Results

One unusual feature of the SCAP was the extent and nature of public disclosure about the process and results. The Federal Reserve released two detailed "white papers," the first (released in April) describing the design and implementation of the exercise and the second (released in May) presenting the results. The latter was particularly notable in that it reported detailed results for each of the 19 individual BHCs that participated in the exercise. It proved to be extremely unusual, if not unprecedented, for supervisors to release this kind of information to the public in the course of traditional microprudential supervision. As noted in the second white paper: "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 (Board of Governors of the Federal Reserve System 2009b)." This macroprudential objective was a driving force behind the entire SCAP exercise.

While the release of the SCAP results seems to have been well-received, there is some need for caution in interpreting this outcome. The positive reaction to release of the SCAP results may not have been transparency per se, but simply because the results were viewed as credible – the aggregate loss projection was viewed as reasonable given the macroeconomic scenario and in the context of projections by other analysts; there was significant variation across firms that corresponded to prior perceptions of relative risk; the process was viewed as thorough and rigorous enough; and the resulting

capital needs were broadly consistent with market expectations for individual firms. Whether the reception would have been positive if the results and process were not seen in this way, or if there had been a negative "surprise" about a firm or group of firms, remains open to debate. But given the nature of the results, the transparency does seem to have met the need of observers, and likely reduced some of the uncertainty about the future health of the banking system.

This raises an interesting question about how much can be extrapolated from the SCAP disclosure to on-going supervisory and examination exercises. One argument is that the SCAP experience suggests that greater transparency and openness about examination results and supervisory assessment would be beneficial. A key question is whether the SCAP was widely seen as a "special" supervisory exercise, done at a moment of great uncertainty and financial market stress, and that this specialness shaped the reaction to the release.

G. Clear and Predictable Goals and Actions

The final element of note is that the SCAP was designed and implemented to meet a well-specified policy objective – to assess the capital buffer needed by large banking organizations to remain well-capitalized even in an unexpectedly adverse economic environment – and a clear action plan to fill any capital need was an integral part of the process. Participating BHCs needing to augment their capital were required to develop a capital plan that laid out the actions they would take to meet the SCAP buffer over the six months following the analysis (by November 9, 2009). Supervisors reviewed and accepted those plans, and have been tracking adherence to plans and progress toward meeting the specified capital goals. BHCs unable to raise capital through private sources during this window had the option to apply for Mandatory Convertible Preferred stock from the U.S. Treasury under its Capital Assistance Program. The 10 BHCs with a capital need raised $39 billion through new common equity issuance, $23 billion through conversion of preferred to common equity, and $9 billion in new equity from asset sales by the November 9 deadline.[7]

This clear goal and observable outcome was a key characteristic of the SCAP, but one that might not have direct parallels with either macro- or microprudential supervision. While a financial crisis like the one we are experiencing is a sign that macroprudential supervision was insufficient and a bank failure might imply that microprudential supervision was inadequate, it is harder to publicly judge the outcomes of crises or failures averted. A significant challenge for any macroprudential regime is to remain vigilant and lean against the wind during booms.

[7] Board of Governors of the Federal Reserve System. Press Release dated November 9, 2009.

IV. Conclusions

The recent Supervisory Capital Assessment Program (SCAP) was designed and executed in a period of substantial uncertainty about the path of the economy and the outlook for individual BHCs. The SCAP's twin objectives of maintaining aggregate lending and credit provision capacity by ensuring that individual BHCs had sufficient capital to continue lending under a range of possible outcomes reflect these overlapping macroprudential and microprudential concerns. The SCAP's design and process also embodied these two perspectives, combining top-down industry-wide estimates and projections with bottom-up, firm-specific data and analysis. To a large extent, the SCAP's perceived effectiveness reflects the environment in which it took place, its complementary macroprudential and microprudential goals and approach, and the clear policy implications from the exercise.

What lessons can we draw from the SCAP about designing and implementing future macroprudential supervisory efforts? First, the goals, approaches, and consequences should be shaped to reflect the broader macroeconomic and financial sector environment in which the supervision takes place. The SCAP sought to reduce the likelihood of a very adverse macroeconomic outcome by stabilizing credit provision, a macroprudential and explicitly endogenous view of the desired outcome. Future macroprudential supervision should have a similar "endogenous" objective.

Second, the SCAP balanced complementary macroprudential and microprudential perspectives in both design and implementation. To achieve the SCAP's broader goals, it made sense to look both collectively and individually at these large banking companies. Future exercises should also balance these two perspectives, so that each has its role.

Finally, the resultant policy actions strongly supported the overall goals of the SCAP. BHCs with an identified need for an additional capital buffer were required to raise capital to meet this buffer, and that information was publicly disclosed. Both the disclosure and the capital raising were done in the presence of a backstop capital facility provided by the U.S. Treasury, providing confidence that each firm would ultimately be able to meet the buffer. This enhanced confidence in the banking system at a moment when there was significant concern about the possibility of severe outcomes. Future macroprudential supervisory exercises should also have tangible follow-through results that support their broader goals.

Table 1: The SCAP in the Context of Macro- and Microprudential Supervision

I.	Macroprudential II.	Microprudential III.	SCAP IV.
Objective	Limit financial-system distress that leads to GDP declines	Maintain BHC solvency to protect consumers and deposit insurance fund	Ensure adequate system capital to promote lending and restore investor confidence
Macroeconomic Impact	Views macro economy as "endogenous" to supervision	Takes macroeconomy as given, an "exogenous" perspective	Explicitly designed to reduce the probability of adverse outcomes
Focus	Top-down with emphasis on largest BHCs	Bottom-up	Examine 19 largest BHCs with 2/3 of assets
Risk Exposure	Correlation and common exposures	Idiosyncratic	Apply common shocks to all participating BHCs and incorporate idiosyncratic exposures and variation
Perspective	Probabilistic and risk-based; focus on scenario analysis	Accounting-based; focus on compliance and systems	Two-year assessment of potential performance in low-probability scenario
Disclosure	Wide dissemination of results, e.g., Financial Soundness Indicators, macro-prudential indicators, and early warning signals	Standardized reports or "confidential supervisory information"	Release BHC-specific information about potential losses, resources, and capital needs

Source: Authors' assessment, Borio (2003), Chul (2006).

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