A closer look

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Stress testing: A look into the Fed's black box

Overview

On March 26th, the Federal Reserve (Fed) announced the results of its annual Comprehensive Capital Analysis and Review (CCAR).[1] This year the Fed assessed the capital plans of 30 bank holding companies (BHCs) – 12 more than last year – and objected to five plans (four due to deficiencies in the quality of capital planning process, and one for falling below quantitative minimum capital ratios). Two other US BHCs had to "take a mulligan" and quickly resubmit their plans with reduced capital actions to remain above the quantitative floors.

The CCAR 2014 results send two overarching messages: The quality of the capital planning process is now a more prominent aspect of the Fed's focus (versus just the quantity of capital), and the bar continues to rise, especially for the largest firms. Therefore, BHCs must continue to improve their capital planning processes regardless of whether they meet quantitative capital requirements.

The Fed has been signaling its higher qualitative expectations for some time, particularly in its August 2013 guidance. Our view has been that the increase in supervisory transparency leading up to CCAR 2014 was meant as fair warning that the Fed intended to raise the bar.[2] This year's disclosures outlined the Fed's rationale for each of the qualitative failures for the first time. Although this increased transparency will help BHCs better prepare for future CCARs, we believe it also reduces the Fed's tolerance for shortfalls in the firms' compliance efforts.

Fed objections this year covered both US and foreign-owned BHCs. Three of the six largest US BHCs were unable to make desired capital distributions, in part due to the Fed using its own forecasting models for the first time (rather than relying on the BHCs' models). In addition, half of foreign-owned BHCs' plans were rejected due to qualitative issues (three of six). These outcomes suggest that the Fed will likely continue to use its models to exert downward pressure on stressed capital ratios to keep capital in the system, supplemented by its heightened qualitative assessments.

This **A closer look** provides our quantitative and qualitative analyses of the CCAR 2014 results and lessons learned, and our view of enhancements needed to meet increasingly heightened regulatory expectations.

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[1] See PwC's *First take: CCAR stress testing* (March 27, 2014). The release of CCAR results followed the Fed's earlier release of its Dodd-Frank Act Stress Test (DFAST) results on March 20th.

[2] See PwC's *Regulatory Brief, Stress testing: Failures on the horizon?* (November 2013).

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Quantitative analysis of CCAR results

Although BHCs had higher starting Tier 1 Common (T1C) ratios in 2014 compared with 2013 (11.3% versus 11.1%), their stressed T1C ratios ended up *lower* in 2014 than 2013 (6.3% versus 6.5%). This decline was largely due to (1) the Fed's use of its own balance sheet and risk weighted assets (RWA) growth projections for the first time, and (2) the BHCs' additional capital distributions.

The six largest BHCs[3] saw the greatest declines in their 2014 stressed T1C ratios, and the greatest divergence between their models' stressed T1C ratios and that of the Fed's models. As a result, the largest BHCs were relatively cautious with their capital actions, but three nevertheless were unable to distribute as much capital as desired (one BHC's plan was rejected and two were forced to quickly resubmit modified plans).

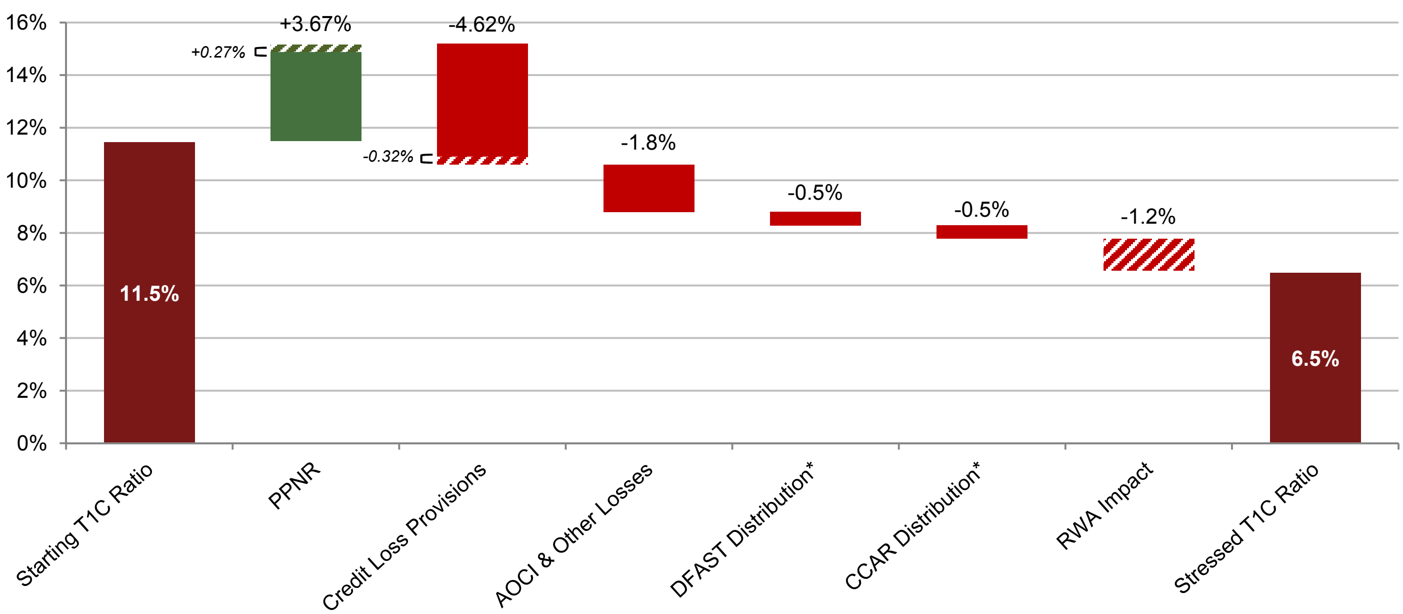
This analysis is detailed in the following subsections.

[3] These BHCs are: Bank of America, Citigroup, Goldman Sachs, JP Morgan, Morgan Stanley, and Wells Fargo.

The Fed's projection of balance sheets and RWAs increase capital dilution

The Fed's use of its own projections of BHCs' balance sheet and RWA growth over the nine-quarter severely adverse scenario (rather than the BHCs' projections) resulted in significant capital dilution – specifically, a 125 basis points (bps) decrease in the T1C ratio across the 30 CCAR banks. We estimate that a significant portion of this decrease (~120 bps) was caused by the Fed's higher RWA projections compared with the BHCs' (see "RWA Impact" in the figure below). The remaining 5 bps dilution was the result of a 32 bps increase in credit loss provisions (reducing the T1C ratio), offset by a 27 bps increase in pre-provision net revenue (or PPNR, increasing the T1C ratio). The figure below shows the incremental impact of the Fed's higher projections (three diagonally shaded areas) on PPNR, credit loss provisions, and RWA projected by the BHCs (green denotes increases in the T1C ratio while red marks decreases).

Composition of Change in T1C Ratio – 2014
(The impact of the Fed's balance sheet and RWA projections is diagonally shaded)



*The primary difference between DFAST's and CCAR's capital distributions is that CCAR's are based on the BHCs' proposed capital plans, whereas DFAST's are standardized based on the BHCs' pre-existing dividend payout rate.

Fed's rationale for balance sheet and RWA projections

In December 2013, the Fed announced that it would independently forecast BHC balance sheets and RWAs[4] rather than using the BHCs' projections, due to concerns that BHCs were "shrinking to health" (i.e., looking healthier by projecting smaller balance sheets, especially with respect to assets with higher loss rates).

While some asset classes may contract during a period of macroeconomic stress, the Fed has indicated that, on average, assets at the largest BHCs did not decline during previous recessions. The Fed had earlier expressed concern that, despite this historical evidence, BHCs had forecasted declining asset balances in previous stress test cycles.

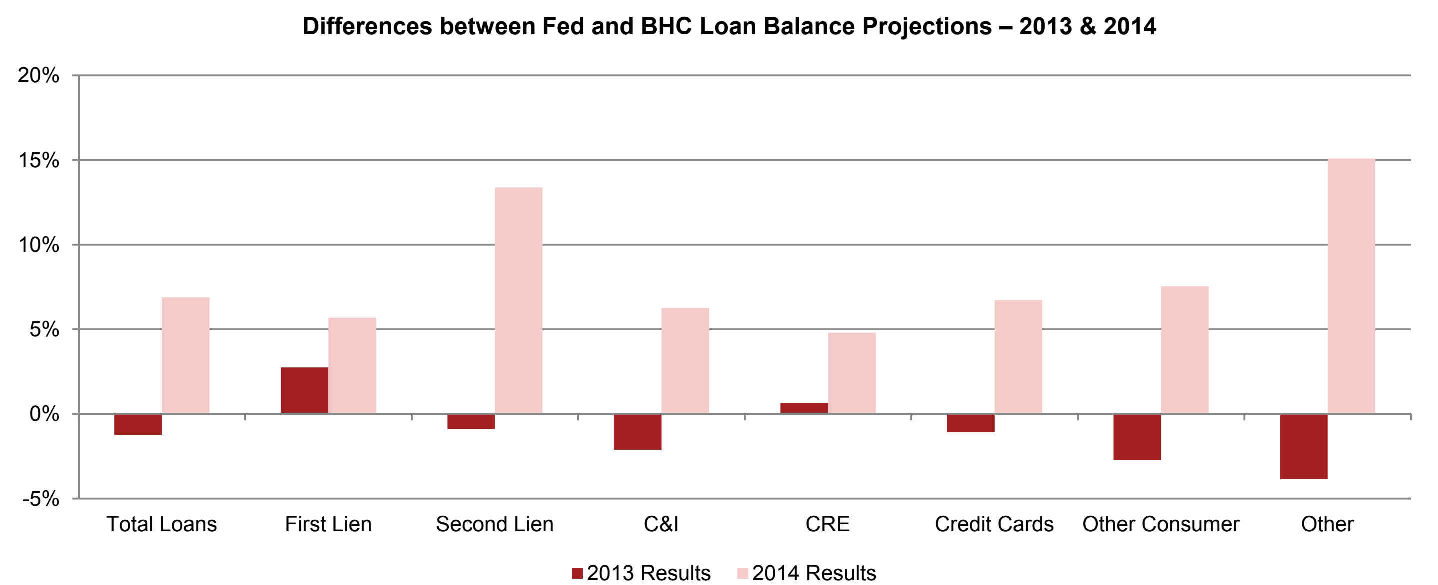
[4] The Fed has chosen to forecast loans, securities, and liabilities separately but not individual asset classes within these broad categories. For example, the Fed forecasts total loans but not first lien residential mortgages.

The Fed's 2014 balance sheet projections were 5-15% higher than BHCs' projections

The Fed's average assets projections were approximately 9% higher than the BHCs' over the nine-quarter severely adverse scenario (a 4% increase projected by the Fed, versus a 5.3% *decrease* projected by BHCs). Because assets are the basis for RWA calculations, the Fed's RWA projections were also higher than the BHCs': approximately by 11% under Basel I and by 15% under Basel III.[5]

Loan balance projections for the 18 original CCAR BHCs by the Fed and by BHCs provide an illustrative example of these differences. In 2013, total loan balances projected by the Fed were 1.2% *lower* than the BHCs' own projections, while in 2014 the Fed-projected total loan balances were 7% *higher* than the BHCs' projections. The figure below shows the difference between the Fed and BHC-projected loan balances in 2013 (when the Fed did not use its own projections), and that same difference in 2014 (with the Fed using its own projections). The disparities in 2014 were far wider and generally less favorable to BHCs.

[5] The following 10 BHCs that did not report RWA forecasts are excluded from our analysis of RWA growth rates: BB&T, Morgan Stanley, State Street, Comerica, HSBC, Huntington, Northern Trust, Santander, UnionBanCal, and Zions.



Asset quality continues to show improvement

This year's loan loss rates were lower than last year's, showing that asset quality continues to improve. We attribute this trend to improvements in the macroeconomic environment and in borrower credit quality. The loss rate for total loans (across all asset classes) under the Fed's models over the nine-quarter severely adverse scenario decreased from 7.5% in 2013 to 6.8% in 2014.

On a more granular level, loan loss rates decreased for major asset classes under the Fed's models, except for junior lien mortgages and commercial real estate (CRE). While this trend is still positive overall for BHC capital ratios, the Fed's projected loss rates across asset classes did not decrease by as much as the rates projected by the BHCs themselves, which were on average 2% lower than the Fed's in 2014 (see the two columns labeled "Diff." in the figure below).

Comparison of Fed and BHC Loan Loss Rates – 2013 & 2014

	18 Original CCAR BHCs						30 CCAR BHCs		
	Fed		BHCs		*Diff.*		Fed	BHCs	*Diff.*
	2013	2014	2013	2014	*2013*	*2014*	2014	2014	2014
Total Loans	7.5%	6.8%	5.4%	4.8%	*2.1%*	*2.0%*	6.9%	4.9%	*2.0%*
1st Lien Mortgage	6.6%	5.5%	3.5%	2.5%	*3.1%*	*3.0%*	5.7%	2.5%	*3.2%*
Junior Lien Mortgage	9.6%	9.8%	8.8%	6.3%	*0.8%*	*3.5%*	9.6%	6.3%	*3.3%*
Commercial & Industrial	6.8%	5.6%	3.9%	3.9%	*2.9%*	*1.7%*	5.4%	4.0%	*1.4%*
Commercial Real Estate	8.0%	8.3%	4.4%	4.4%	*3.6%*	*3.9%*	8.4%	4.6%	*3.8%*
Credit Cards	16.7%	15.0%	15.3%	14.5%	*1.4%*	*0.5%*	15.2%	14.3%	*0.9%*
Other Consumer	6.1%	5.7%	4.7%	4.7%	*1.4%*	*1.0%*	6.0%	5.4%	*0.6%*
Other Loans	1.8%	2.5%	1.3%	1.3%	*0.5%*	*1.2%*	2.7%	1.4%	*1.3%*

What is driving the decrease in loan loss rates?

First lien mortgages and credit cards: The decrease in Fed-projected residential first lien mortgages and credit card loss rates is likely due to (a) improved unemployment rate and housing price index (HPI) in the severely adverse scenario, and (b) heightened underwriting standards over the past several years.

While the severely adverse scenarios in the past three CCAR cycles projected similar changes in the unemployment rate over its nine-quarter period, the starting point has improved each year. Similarly, the change in HPI in CCAR 2014 and CCAR 2013 were almost identical, while the starting point improved in 2014 as the housing market continued its recovery. Finally, the improvement in underwriting standards over the past several years has increased the credit quality of loans, leading to lower stressed loss rates.

Commercial and industrial credit: Projected commercial and industrial credit losses have also declined steadily over the past CCAR cycles. This is likely due to improvements in market indicators that are used as model inputs.[6]

Junior lien mortgages: Despite improved economic conditions, the Fed's projected loan loss rates on junior lien residential mortgages increased slightly from 9.6% in 2013 to 9.8% in 2014. This increase is likely due to the incorporation of the following factors in the Fed-projected 2014 models: (a) Home equity line of credit (HELOC) end-of-draw risk[7], and (b) the delinquency status of senior lien mortgages.[8]

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[6] These market indicators are (a) changes in GDP, unemployment, and BBB bond spread, and (b) either expected default frequency calculated using borrowers' financial statements, or the BHC's internal risk rating.

[7] HELOC end-of-draw risk stems from payment shock to the borrower when a HELOC moves from its interest-only draw period (lower monthly payment) to an amortizing loan (higher monthly payment).

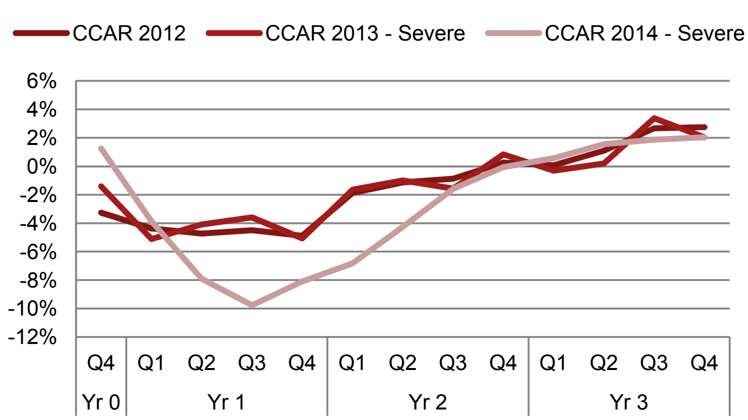
[8] Inclusion of the delinquency status of senior lien mortgages in the Fed's projection increases the probability of default on junior mortgages that are behind a delinquent senior mortgage, thus increasing the projected loss rate.

Many existing, lower credit quality HELOCs were originated with 10-year draw periods (i.e., interest-only payments) in 2005-2007 when underwriting standards were extremely loose. Borrowers have generally been able to remain current on these HELOCs because payments during the draw period are interest only compared to post-draw period payments which include interest and amortized principal. As the 10-year draw period on these loans expires (starting with 2004-2005 loans in 2014 CCAR), higher monthly payments experienced by higher risk HELOC borrowers increase projected loss rates. This issue will become more pronounced in CCARs 2015 and 2016 when credits originated in 2006 and 2007 will also enter the forecasting horizon. Therefore, we expect junior lien loss rates to continue to elevate in future CCARs.

Commercial real estate: Although CRE vacancy rates, rents, and net operating income increased over the past year, these improvements were offset by a sharper decline in the commercial property price index (CPPI). Therefore CCAR 2014's CRE loan loss rates (at 8.4%, similar to 8.2% in 2013) remained substantially higher than 2012 rates (5.2%). We believe that the large increase in CRE loss rates from CCAR 2012 to 2013 was driven by an undisclosed change in the Fed's forecasting approach, given that overall scenarios (including CPPI) were similar between the two years and CRE market fundamentals improved during the 2012-2013 period. The similarity between CCAR 2013's and 2014's CRE loan loss rates suggests that the Fed's revised approach was retained for CCAR 2014.

The figure below provides a comparison of forecasted CPPI rates in CCAR 2012, 2013, and 2014, showing the similar CPPI trend in all three CCAR cycles.

Change in CPPI in Fed Scenarios – 2012 to 2014



Trading and counterparty losses have limited impact on ratios

Trading and counterparty losses at the six largest BHCs[9] increased by only $1.9 billion in CCAR 2014. Despite a decline in trading exposures, a greater increase in these projected losses was expected due to the inclusion of a single largest counterparty default for the first time in CCAR 2014. However, the impact of this single largest counterparty shock was muted, likely because the G-7 sovereigns and designated central clearing firms were not included as possible defaulting counterparties (therefore excluding from loss calculations an increasingly larger volume of trades that is directed toward central clearing).

The relatively small $1.9 billion increase in trading and counterparty losses likely indicates that firms' trading portfolios have reduced sensitivity to market risk. This may reflect a shift in the firms' business models from more speculative to more flow-based revenue models, as firms prepare to comply with the Volcker rule.

BHCs prepare securities portfolios for new Basel III CET1 definition

Advanced Approaches BHCs[10] are classifying a higher proportion of their securities as held-to-maturity (HTM) rather than available-for-sale (AFS) in preparation for the new Basel III Common Equity Tier 1 (CET1) definition.[11] Under the new CET1 definition all losses (and gains) on AFS debt securities flow through to CET1 as part of accumulated other comprehensive income (AOCI), whereas for HTM securities only other than temporarily impaired (OTTI) losses flow through.

The trend toward holding more HTM securities is likely to continue in future years. In CCAR 2014 only 20% of AOCI was incorporated into CET1 for 2014 projections and only 40% for 2015's. The percentage of AOCI incorporation into CET1 will increase in future years until reaching 100% in 2018. As shown in the table below, had AOCI been fully incorporated into CET1 for CCAR 2014, we estimate that Advanced Approaches BHCs' CET1 would have been 100 bps lower in the adverse scenario and 40 bps lower in the severely adverse scenario.

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[9] These six largest BHCs have traditionally been subject to the global market shock. Single counterparty default shocks were applied to these BHCs for the first time in CCAR 2014, as well as to Bank of New York Mellon and State Street.

[10] Advanced approaches BHCs are those with consolidated assets of at least $250 billion, or total consolidated on-balance sheet foreign exposure of at least $10 billion. These BHCs are: American Express, Bank of America, Bank of New York Mellon, Capital One, Citigroup, Goldman Sachs, HSBC, JPMorgan Chase, Morgan Stanley, Northern Trust, PNC Financial, State Street, US Bancorp, and Wells Fargo.

[11] The HTM portion of total securities (HTM and AFS) held by the 30 CCAR BHCs increased from 7% at year-end 2012 to 13% at year-end 2013.

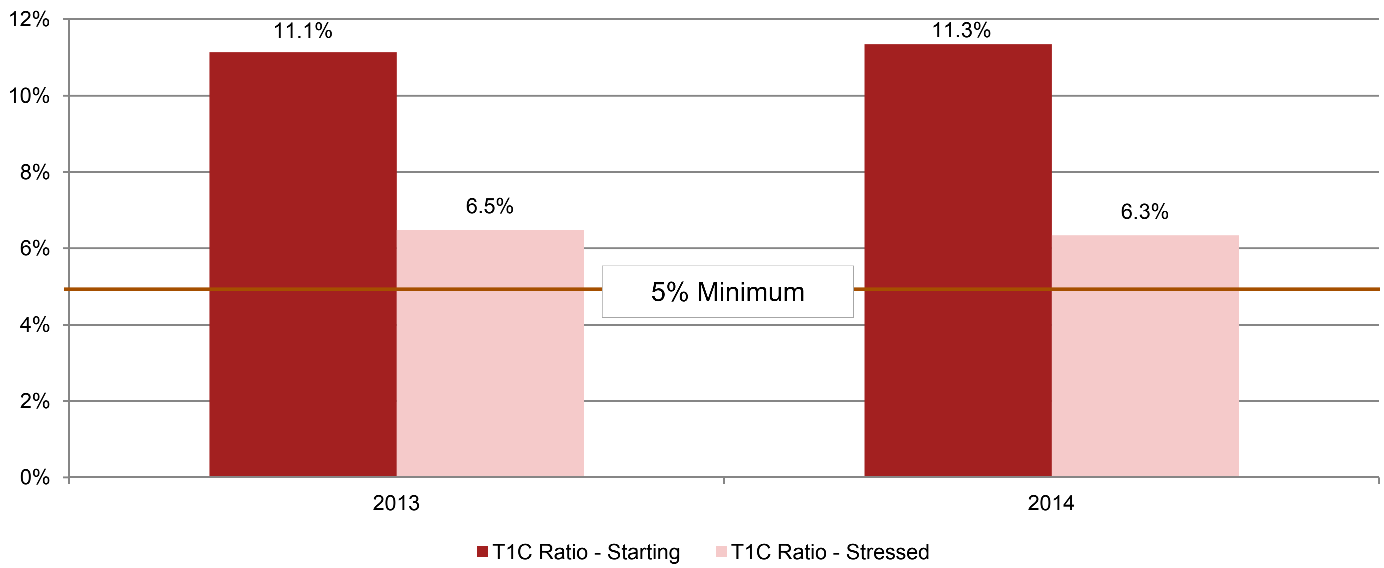
Impact of Hypothetical Full AOCI Incorporation into CET1 Ratio – 2014
(Advanced Approaches firms)

	AOCI	Stressed CET1 Ratio	Stressed CET1 Ratio with AOCI Fully Incorporated	AOCI Impact on CET1
Adverse	$133.75 bn	9.8%	8.8%	1%
Severely Adverse	$54.5 bn	7.8%	7.4%	0.4%

T1C ratios declined in CCAR 2014

Despite higher starting T1C ratios and improved asset quality, BHCs' T1C ratios declined in 2014 (see the figure below showing a 20 bps decrease in the average stressed T1C ratio between 2013 and 2014). The increase in the BHCs' starting average T1C ratio from 2013 to 2014 (from 11.1% to 11.3%) was offset in 2014 by the more aggressive Fed RWA and balance sheet projections, and by the BHCs' additional capital distributions. The below figure compares starting and stressed T1C ratios in CCARs 2013 and 2014.

Starting and Stressed CCAR T1C Ratios – 2013 & 2014
(Original 18 CCAR BHCs)



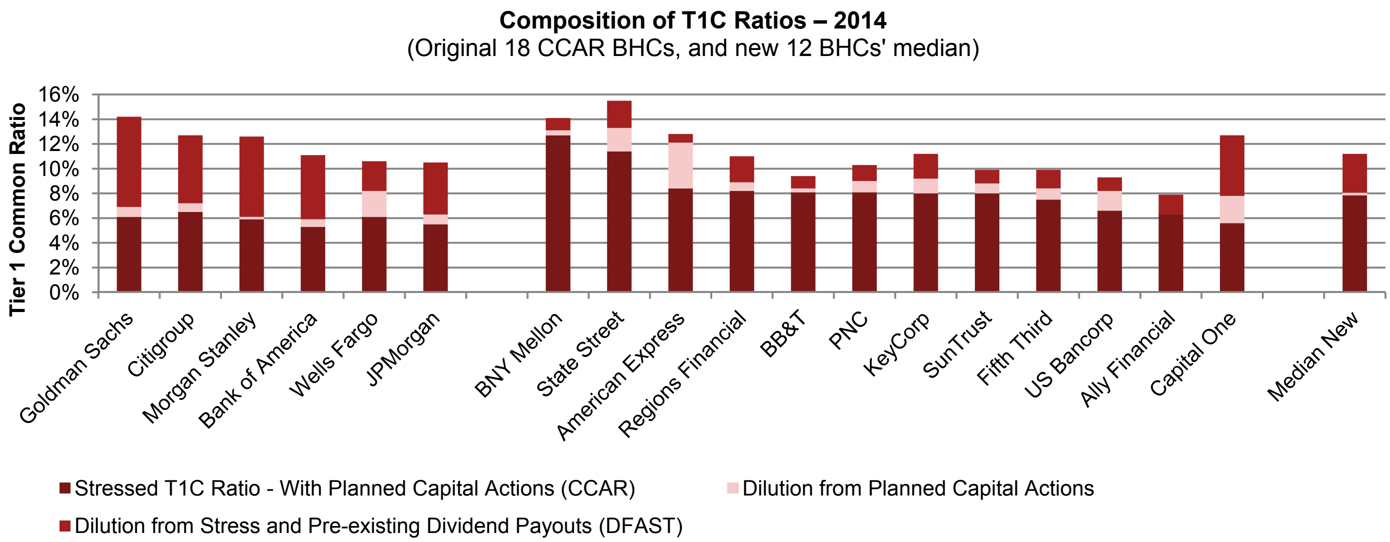
Largest BHCs demonstrate little capital flexibility

As shown by the March 20th DFAST results,[12] the six largest BHCs have less capacity for incremental capital actions (despite higher starting T1C ratios). Our analysis shows that median capital dilution[13] at the six largest BHCs (under DFAST – therefore, before planned capital actions) was 400 bps higher than the other 12 original CCAR firms, which signifies the reduced capital flexibility of the largest BHCs. The largest BHCs' reduced T1C ratios highlight the tension between the shareholders' desire for capital returns (and analysts' recent calls for higher distributions) and the regulators' mandate to keep capital in the system. The regulators seem to have won this round as three of the six largest BHCs had to lower their projected capital distributions to satisfy the Fed. This difference in capital flexibility also signifies the potential for increased future capital distributions at the remaining CCAR BHCs.

[12] See note 1.

[13] Capital dilution due to pre-existing capital actions and stressed variables.

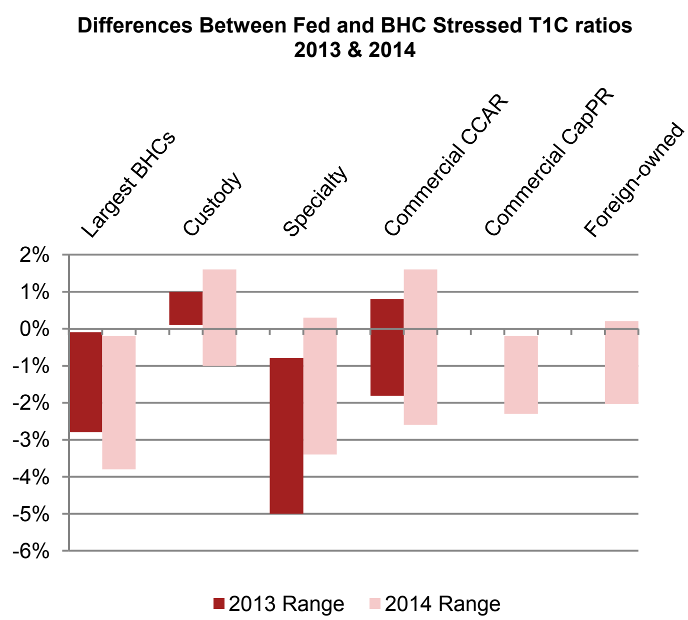
The figure below shows the lack of capital flexibility of the six largest BHCs compared with the relatively higher capital flexibility of the other original CCAR BHCs.



Fed vs. BHC model uncertainty added downward pressure on the largest BHCs' planned capital actions

The difference between the Fed's and BHCs' projected DFAST T1C ratios was significant for the largest BHCs. These firms underestimated (relative to the Fed's calculations) their T1C ratios by up to 3.8 percent, as shown in the first column of the figure below. The anticipation of this wide range of divergence from Fed results exacerbated these firms' caution when planning their capital distributions. Despite this caution, three of the six firms were nevertheless unable to distribute as much capital as desired (one BHC's plan was rejected and two had to quickly resubmit reduced capital actions).

Other BHCs also diverged from Fed-projected T1C ratios, albeit to a lesser extent than the largest firms. The following figure compares the range of difference between BHC and Fed-projected T1C ratios in 2013 and 2014 for six categories of firms.[14]



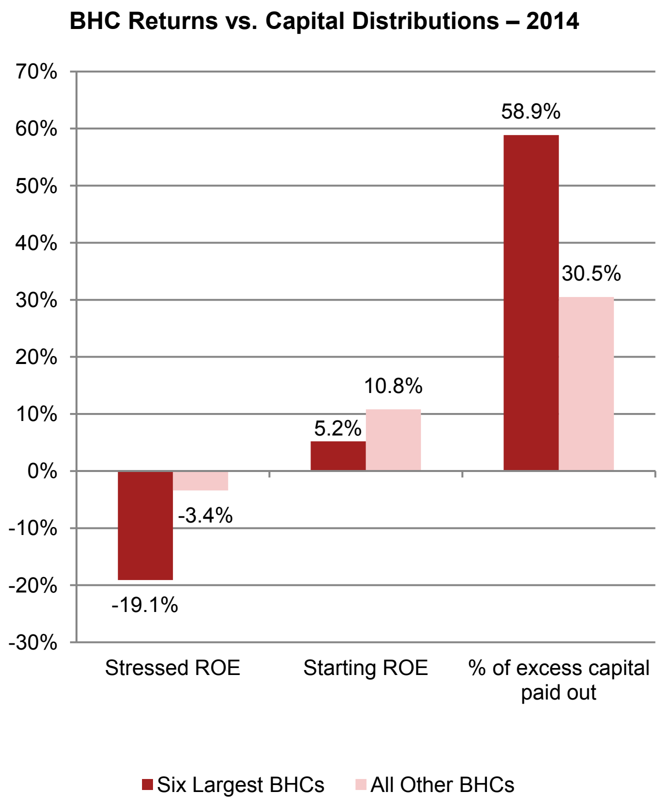
Largest BHCs have lower returns, yet relatively higher capital payouts

The six largest BHCs had lower stressed and actual ROEs than their smaller peers. However, the largest BHCs also paid out a greater portion of their capital cushions to shareholders in the form of dividends and buybacks.

As shown in the figure below, the largest BHCs had a lower starting ROE than other firms (approximately 5% versus 11%), and the largest BHCs' stressed ROEs were much lower than their peers' (-19% versus -3%). This significant decrease of 24 percentage points however does not tell the whole story, as the largest BHCs also

[14] These categories are: (1) Largest BHCs (Bank of America, Citigroup, Goldman Sachs, JP Morgan, Morgan Stanley, Wells Fargo), (2) Custody (BNY Mellon, Northern Trust, State Street), (3) Specialty (Ally, American Express, Discover Financial), (4) Commercial CCAR (BB&T, Capital One, Fifth Third, KeyCorp, PNC, Regions, SunTrust, U.S. Bancorp), (5) Commercial CapPR (Comerica, Huntington Bancshares, M&T Bank, Zions Bancorp), and (6) Foreign-owned US BHCs (BMO Financial, BBVA Compass, HSBC North America Holdings, RBS Citizens Financial Group, Santander Holdings USA, UnionBanCal).

paid out twice as much of their capital cushions as did the other BHCs (59% versus 30%). Although higher payouts could lead to lower future capital flexibility, given these BHCs' shareholders' desire for greater capital distributions, these largest BHCs will no doubt continue to focus on increasing their ROEs in the future.



Higher ROE remains elusive due to shifting optimum asset mix

The BHCs' pursuit of maximum ROEs partially depends on achieving the optimum asset mix. However, this mix is still a moving target as it is being defined by the combined impact of multiple developing regulations including CCAR, the Supplementary Leverage Ratio (SLR), the Liquidity Coverage Ratio (LCR), the Net Stable Funding Ratio (NSFR), and expected US rules on a capital buffer for global systemically important banks (G-SIBs), bail-in debt, and short-term funding capital penalties. While the revised capital framework and the LCR incentivize holding less risky assets, the SLR encourages holding riskier and higher-yielding assets. In addition, the upcoming full phase-in of AOCI as a capital deduction under Basel III (for Advanced Approaches firms) will create tradeoffs between the liquidity buffer's composition and the funding profile more broadly, creating an incentive to substitute more sensitive longer-term assets for short-term investments (conflicting with the LCR and NSFR).

Qualitative analysis of CCAR results

Quality of process trumps quantity of capital

Four out of the five capital plans were objected to during CCAR 2014 based on the Fed's qualitative assessment of the BHCs' capital planning processes. These qualitative rejections were broadly based on (a) insufficient improvement in previously identified deficiencies in capital planning practices, and (b) and new capital planning deficiencies noted by the Fed in the following areas:

- Governance
- Internal control
- Scenario generation
- Revenue and loss estimation
- Loss estimation across business lines
- Risk identification
- Risk management
- Management information systems
- Assumptions and analysis

Now that capital levels have shown improvement, the Fed is focusing on ensuring that BHCs have stronger capital planning processes that will allow the firms to identify and quantify material risks. Institutions were warned last August in the Fed's capital planning guidance that stress testing processes and governance (especially effective review and challenge) are important components of a strong capital planning process and would be incorporated in the Fed's evaluations of their capital plans.[15] We expect the Fed's emphasis on quality of process to remain a strong theme in future CCARs.

Increased transparency into Fed process leads to heightened expectations

The transparency of the Fed's capital plan evaluation and decision making has grown over the years and may be contributing to the Fed's heightened expectations for BHCs' capital planning processes. In CCAR 2012, the Fed disclosed details that had not been revealed in 2011, namely stressed capital ratios and a list of firms that had passed or failed. The following year the Fed for the first time publicly disclosed whether firms had failed for quantitative or qualitative reasons.

[15] See PwC's *Regulatory Brief, Stress Testing: Midterm results improved, but it's all about the final* (September 2013).

Continuing this trend, in August 2013 the Fed published its supervisory expectations of capital planning at large BHCs. This publication provided insight into the Fed's expectations, and provided the Fed's views on merits and weaknesses of capital planning processes of various firms.

The increasing transparency of the Fed's decision-making process better equips BHCs to meet supervisory expectations, as firms no longer have to rely solely on principle-based Fed guidance and MRA letters. It also addresses criticism that the Fed's evaluation process is a "black box."

On the flip-side, this transparency increases the Fed's expectation of the firms' compliance efforts. Although a broad range of acceptable stress testing approaches still exists, the roadmap to robust capital planning has now been laid out more clearly. Fed's heightened expectations will apply even to the smaller BHCs that are new to the process, although to a lesser extent than their larger, more complex peers.

Fed heightens expectations for the largest and most complex BHCs, again

When the Fed rejected Citigroup's capital plan in 2014, it highlighted a rationale for heightened regulatory expectations for the largest and most complex BHCs. While the Fed acknowledged Citigroup's considerable progress in risk management and controls, it noted issues with the firm's projections of revenues and losses across its global operations, and with the firm's ability to develop scenarios that stress idiosyncratic risk across its global exposures and business activities. This discussion puts all eight G-SIBs on notice that the Fed's expectations of their capital planning processes will be commensurate with their level of complexity and the riskiness of their businesses.

Evolving supervisory expectations emphasize sophistication and comprehensiveness of the capital planning practices for all BHCs. However these heightened expectations are particularly challenging for institutions with global business models. Satisfying these expectations will require firms to identify risks and translate those risks into a stressed macroeconomic forecast with robust projections of revenues, losses, and capital across business lines and regions. BHCs will gain an understanding of these requirements (and other remediation activities needed) in the feedback letters that they will receive from the Fed.

Foreign-owned US BHCs face additional governance challenges

Of the four BHCs that failed the Fed's qualitative assessment, three are first-time CCAR BHCs. These rejected capital plans show that the overall CCAR processes and forecasting models at the new CCAR BHCs are still relatively immature, particularly with respect to governance and controls that were cited by the Fed as contributing to all three rejections. While the Fed had stated that its expectations of new CCAR participants are lower than its expectations of the largest and most complex BHCs, it is likely that the combination of the Fed's knowledge of more sophisticated processes at other firms (whether new to CCAR or not) and the Fed's publication of the August 2013 capital planning guidance also contributed to these failures.

Furthermore, all three rejected first-time plans belonged to foreign-owned BHCs. CCAR 2014 presented new governance challenges for BHCs in ensuring strong oversight of the capital planning process by the board of directors and senior management.[16] Meeting these governance challenges may be particularly hard for foreign-owned US BHCs, especially where the US subsidiary lacks ultimate capital management authority. This lack of authority and independence in capital management strategy (and in review and challenge activities) may have contributed to the Fed's rejection of the three foreign-owned BHCs plans. In order to meet the Fed's expectations, foreign-owned BHCs must ensure that their US board and senior management are (a) independent of the foreign parent in capital planning, review, and challenge activities, and (b) ultimately responsible for the US BHC's capital plan.

In addition, the CCAR 2014 results evidence the rigor that future CCAR firms, especially the foreign-owned BHCs, will be subject to under the Enhanced Prudential Standards (EPS) rule. For instance, with regards to effective board and senior management oversight, EPS requires that foreign banking organizations establish intermediate holding companies (IHCs) in the US, and that IHCs maintain a US Risk Committee to oversee risk management activities of US operations, reporting either to the global parent board or to the IHC board. IHCs must also adopt a comprehensive risk management framework for US operations, based on a standalone US framework (or the global risk framework if certain requirements are met). These regulations will require analysis of US-based BHCs' current board committee structures and risk frameworks by foreign banking organizations to ensure their compliance.

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[16] The Fed's expectations in this area were recently broadened to require that the board and senior management be fully informed on key limitations, assumptions, and uncertainties within the capital planning process (to be able to effectively challenge capital plans).

Areas for continued enhancements

As the regulatory bar continues to rise for qualitative aspects of the capital planning process, relying upon current capabilities is not a good option for BHCs. Successful firms will be those that continue to enhance all aspects of their capital planning, regardless of whether the Fed objected to their CCAR 2014 capital plans. In that regard, BHCs must focus especially on areas where deficiencies have been cited by the Fed, namely (a) scenario generation, (b) revenue and loss modeling, and (c) governance and controls.

Scenario generation

The Fed expects BHCs to be able to develop scenarios that reflect the firms' full range of business activities and that stress their on- and off-balance sheet exposures. Because the Fed-developed scenarios by their nature incorporate only generic stresses to large BHCs, the Fed is increasing its focus on the BHCs' ability to develop scenarios that stress each firm's idiosyncratic risks. Therefore, BHCs must focus on identifying material risks that are not already incorporated into their macroeconomic and operational risk scenarios, and on translating these risks into BHC-generated scenarios. Furthermore, additional capital buffers may be used to capture potential risks arising from inaccuracy of forecasts. All of these efforts must be supported by sufficient documentation.

Modeling enhancements

Loss modeling: BHCs should ensure that forecasting models are sensitive to macroeconomic factors and risk drivers, and perform ongoing analysis of model performance. BHCs should also continue to review and enhance model documentation to ensure that it is up-to-date and reflects changes in the risk environment. Given the Fed's concerns regarding BHCs' ability to understand and evaluate the results generated by vendor loss forecasting models, BHCs that rely on vendor models should consider whether they now have the resources to develop these models internally.

PPNR: Across the spectrum of CCAR BHCs, existing PPNR forecasting capabilities are noticeably less mature than loss forecasting capabilities. To enhance their PPNR modeling capabilities, BHCs need to adopt a more statistical approach to forecasting their balance sheets and PPNR (including stronger statistical relationships between macroeconomic factors and PPNR). In addition, while the budgeting process tends to be more aspirational by nature, it should nevertheless be better integrated with the PPNR forecast and informed by its macroeconomic sensitivities. PPNR forecasts should also account for the BHC's strategic direction and its impact on forecasted spreads.

Governance and controls

Governance: The Fed expects US-based boards to thoroughly review and challenge capital plan assumptions and results. As discussed in the Fed's August 2013 guidance, this exercise should include an evaluation of the appropriateness of the scenarios, the key limitations, assumptions, and uncertainties within the capital planning process, and key assumptions sensitivity analysis.

Controls: Continued documentation and enhancement of the control environment that supports the capital planning process are necessary. Given the Fed's concerns around model governance and data quality, BHCs will be expected to maintain a "golden source" for data that will serve as a standard for data integrity and reconciliations. The Fed has highlighted the ties between the quality of data quality and of model output, indicating the increased importance of controls in future CCAR qualitative assessments.

Appendix – Ten key takeaways from CCAR 2014

1. **Five out-of-bounds and two mulligans**: This year, the Fed tallied five objections – four qualitative and one quantitative, while two BHCs had to "take a mulligan" and resubmit lowered capital actions.
2. **The Fed's use of its own projections diluted capital ratios**: The Fed's first-time use of its own models to project balance sheet and RWA growth proved to have the biggest quantitative impact on results (~125 bps of capital dilution).
3. **Quality trumps quantity**: Quality of the capital planning process may now be the primary limiting factor when it comes to returning capital to shareholders.
4. **Fed disclosure of rationale adds transparency:** This year the Fed was more transparent in highlighting deficiencies in governance and controls, scenario generation, and modeling of revenues (PPNR) and losses.
5. **Twelve new CCAR Banks**: One-third of new CCAR BHCs fail – one quantitatively and three qualitatively.
6. **Board votes on capital plan approvals**: This year the Fed voted on approvals, bringing balance and accountability to the decisions.
7. **More protracted downturn projected in developing market**: The severely adverse scenario captures risks in developing markets, impacting banks with international footprints.
8. **Adverse scenario disclosed**: Muted sensitivity to rising interest rates and a steepening yield curve.
9. **Counterparty default scenario updated**: Limited impact from counterparty shock component, assuming that a BHC's largest single counterparty defaults (90% loss-given-default).
10. **Basel III capital ratio forecasted**: While phased incorporation has begun, the full impact of Basel III capital rules is still a few years away.

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Additional information

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