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Regulatory brief

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Stress testing: Midterm results improved, but it's all about the final

Overview

Before the stress test results for the 18 firms subject to annual Comprehensive Capital Analysis and Review ("CCAR") were released in March 2013, analysts had broadly expected that these firms would easily "pass" and be able to reinstate long-awaited dividend or stock repurchase programs. The regulators had a different perspective, however, and gave some firms "failing" grades and others only partial credit. As a result, these firms were sent to summer school and required to resubmit credible capital plans.

Last week, most of these same 18 institutions publicly disclosed the results of their mid-cycle stress tests, which were submitted to the Federal Reserve ("Fed") in July.[1] This was the first time firms were required to conduct mid-cycle stress tests as part of Dodd-Frank Act Stress Testing ("DFAST").[2] The mid-cycle DFAST stress test differs from the annual CCAR and DFAST in that whereas annual stress testing includes Fed-specified economic assumptions (under baseline, adverse, and severely adverse scenarios), the mid-cycle DFAST stress test relies on the institution's assumptions under these scenarios. In addition, the Fed does not run its own stress test in mid-cycle DFAST, nor perform a capital plan review.

Since the release of this year's CCAR results, the Fed has continued to raise its expectations for DFAST and CCAR processes. First, in May 2013, the Fed released new DFAST-related guidance ("DFAST Guidance") which laid out specific areas where the Fed expected submissions to include firms' analysis and supporting data.[3] Second, in August 2013 the Fed released CCAR-related guidance ("Capital Planning Guidance") covering a wide range of process, governance, and control related matters while delving further into stress loss estimation methodologies for credit, market and operational risks, and into pre-provision net revenue ("PPNR") modelling.[4] This Capital Planning Guidance did not discuss the Fed's internal modelling methodologies for supervisory-run stress tests, but it did provide additional insights into the range of modelling methodologies used by CCAR firms and the Fed's views regarding the relative strengths and weaknesses of the methodologies.

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[1] 16 of the 18 firms have released their required disclosures as of September 20th; therefore, only 16 disclosures are analyzed in this paper.

[2] DFAST was only an annual event, like CCAR, consisting of stress tests run by supervisors ("supervisory-run") and by the firm itself ("company-run"). This new mid-cycle DFAST stress testing is only company-run and is also the first time firms are revealing company-run results based on their own economic assumptions (limited to the "severely adverse" economic scenario).

[3] See *Dodd-Frank Act Mid-Cycle Stress Tests 2013: Summary Instructions*.

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Last week's published mid-cycle DFAST results reveal firms' continued expectations for capital accretion. Although these results are not directly comparable to the released annual DFAST results (which are based on the Fed's economic assumptions), the following are nonetheless notable comparable takeaways:

- The industry on average used assumptions for key macroeconomic forecasts which were in line with the supervisory projections provided for the annual DFAST 2013. However, there is a wide range among the firms with respect to their assumptions and their inclusion of idiosyncratic risks (which, like macroeconomic assumptions, are an important driver for stress test results).
- While credit and trading losses under stressed conditions were reported to be lower than in the annual DFAST, the firms in this mid-cycle DFAST disclosed lower PPNR estimates indicating greater conservatism in their modeling approach.[5]
- The Tier 1 Common dilution average across the reporting firms has significantly improved to an average of 185 bps, as compared to 253 bps in the annual company-run DFAST and 328 bps in the annual supervisory-run DFAST.

Looking forward to the next annual stress testing round in January (CCAR and DFAST 2014), we believe that there will be greater scrutiny of divergence between company-run and supervisory-run results than was demonstrated in 2013, given the regulators' new access to a significant amount of data across firms (via the FR Y-14 regulatory reports) and due to the ongoing enhancements of supervisory models.

Furthermore, the regulatory bar is rising, as evidenced by the Capital Planning Guidance's range of practices discussion. CCAR 2013 was unlikely the end of the Fed's objections to firms' capital plans. Merely fixing last year's supervisory issues will not guarantee a passing grade in 2014.

In this **Financial Services Regulatory Brief**, we (a) provide background and analysis of the mid-cycle DFAST results, (b) offer our view of the August Capital Planning Guidance, and (c) suggest how firms can efficiently meet stress testing regulatory expectations going forward.

The Mid-cycle DFAST results

Under the DFAST Guidance, firms' mid-cycle DFAST submissions were expected to incorporate the following four key elements:

- Stress test results based on firm-developed economic scenarios
- Baseline, adverse, and severely-adverse economic scenarios that include key data required by the FR Y-14A schedules, in addition to other supporting information
- Capture of any on- or off-balance sheet exposure which could impact regulatory capital levels
- Capital actions based on historical dividends, without redemptions or capital repurchases

With this guidance in mind, the mid-cycle DFAST results indicate the following:

1. Macroeconomic forecasting and idiosyncratic risk: *The severity of the firms' economic assumptions was in line with annual DFAST; however, a wide disparity of assumptions existed among institutions for capturing idiosyncratic conditions.*

Economic assumptions for industry average GDP, unemployment, housing price index ("HPI"), and the equity index were in line with the Fed's 2013 annual assumptions. The chart below compares the median firm assumption (and the range of assumptions) under mid-cycle DFAST with those set by the Fed under the annual DFAST, both under severely adverse economic scenarios.

DFAST 2013: Firm (mid-cycle) vs. Fed (annual) economic assumptions

	GDP	Unemployment	HPI	Equity Index
Mid-cycle – firm (median)	-5.6%	11.9%	-20.3%	-45.5%
Mid-cycle – firm (range)	-8.0% / -1.1%	13.9% / 10.8%	-25.0 % / -14.8%	-66.9% / -11.0%
Annual – Fed	-6.1%	12.1%	-21.1%	-52.0%

[4] See *Capital Planning at Large Bank Holding Companies: Supervisory Expectations and Range of Current Practice.*

[5] Firms' models are not disclosed as part of DFAST.

Although a wide range exists under mid-cycle DFAST among the firms across these four economic factors, this range was driven by a few outlier firms. Most firms' factors were fairly closely aligned to annual DFAST.

On the other hand, mid-cycle DFAST firms employed widely divergent methods for capturing idiosyncratic events specific to their risk profile such as increased levels of stress in macro-economic variables, reputational elements, large counterparty defaults, and region and industry loan concentrations. Only one firm quantified the incremental impact of idiosyncratic events to its capital ratio, thus somewhat reducing the comparability between firms of these mid-cycle results.

2. PPNR and credit/trading losses: *While PPNR forecasts used in the DFAST mid-cycle were more conservative than those projected in the annual DFAST, credit and trading loss estimates were less conservative largely due to continued improving credit performance and de-risking of trading portfolios.*

Median PPNR relative to average assets was 2.4% for the mid-cycle stress tests versus 2.6% for annual DFAST's company-run estimates (and 2.7% for annual supervisory-run estimates). The downward trend is driven primarily by investment banks and regional banks, as depicted in the below chart.

DFAST 2013: annual vs. mid-cycle PPNR/average-assets (median)

	Annual (supervisory- run)	Annual (company-run)	Mid-cycle (company-run)[6]	Trend (between company-run tests)
Universal banks[7]	2.3%	2.5%	2.4%	▼
Investment banks[8]	1.0%	2.2%	1.7%	▼
Custody banks[9]	1.8%	0.9%	1.3%	▲
Regional banks[10]	3.7%	3.1%	2.9%	▼
All firm-types	**2.7%**	**2.6%**	**2.4%**	▼

While PPNR became more conservative, stressed loss rates for all credit portfolios became less conservative. The below chart shows that stressed loss rates are now lower than they were in the annual DFAST. When analyzed by firm-type, the trend is driven by universal banks and regional banks, and likely reflects improved model specifications, different macroeconomic scenario assumptions, or risk reduction and stricter underwriting standards across the industry.

DFAST 2013: annual vs. mid-cycle stressed loss rates – by firm-type (median)

	Annual (supervisory-run)	Annual (company-run)	Mid-cycle	Trend (between company-run tests)
Universal banks	7.4%	5.2%	4.4%	▼
Investment banks	4.2%	1.1%	1.4%	▲
Custody banks	2.4%	0.9%	1.2%	▲
Regionals	6.8%	5.1%	4.7%	▼
All firm-types	**6.7%**	**4.9%**	**4.3%**	▼

[6] Again, mid-cycle DFAST is only company-run, unlike annual DFAST (and the mid-cycle public disclosures are limited to the severely adverse economic scenario based on the firms' economic assumptions, unlike the annual public disclosures which are based on the Fed's economic assumptions).

[7] Universal banks include Bank of America, Citigroup, JP Morgan, and Wells Fargo.

[8] Investment banks include Goldman Sachs and Morgan Stanley.

[9] Custody banks include BNY Mellon and State Street.

[10] Regional banks include Ally, BB&T, Capital One, Keycorp, PNC, Regions, SunTrust, and US Bancorp.

When analyzed by loan-type, the decrease in the firms' stressed loss estimates is driven by a reduction in the loss rates for first lien mortgages, commercial real estate, and commercial and industrial loans, whereas credit cards and junior liens indicated higher loss rates, as demonstrated in the below chart.

DFAST 2013: annual vs. mid-cycle stressed loss rates – by loan-type (median)

	Annual (supervisory-run)	Annual (company-run)	Mid-cycle	Trend (between company-run tests)
First Lien Mortgages	6.3%	3.5%	2.6%	▼
Junior Liens and HELOCs	9.7%	5.6%	6.5%	▲
Commercial and Industrial	6.6%	4.4%	3.7%	▼
Commercial Real Estate	8.0%	4.4%	3.3%	▼
Credit Cards	17.3%	15.3%	16.5%	▲
Other Consumer	4.6%	3.5%	3.4%	▼
Other Loans	1.8%	1.3%	1.4%	▲

The mid-cycle DFAST results also show significantly lower stressed losses for trading exposures and counterparty credit risk, as seen in the below table. The cumulative loss amount for the firms that were required to report this information (i.e., universal banks and investment banks) is $74 billion, a decline of $18 billion from the previous cumulative stress loss of $92 billion in the annual company-run DFAST.

DFAST 2013: annual vs. mid-cycle stressed loss dollar amounts – trading and counterparty exposure (in $billions)

	Annual (supervisory-run)	Annual (company-run)	Mid-cycle	Trend (between company-run tests)
Universal banks	$60B	$57B	$47B	▼
Investment banks	$37B	$34B	$27B	▼
Both firm-types	**$97B**	**$92B**	**$74B**	▼

3. Tier 1 Common: *Capital dilution has significantly improved to an average 185 bps, as compared to 253 bps in the annual company-run DFAST (and 328 bps in the annual supervisory-run DFAST).*

Overall, DFAST mid-cycle stress results generated lower capital dilution, and higher minimum stressed capital ratios, relative to the annual 2013 results. The higher stressed capital ratios were driven by lower stressed loss rates, even when PPNR estimates were somewhat more conservative. However, it is unclear whether this development represents a real reduction in risk that will carry through to CCAR 2014 (and if it will increase firms' capital flexibility), or whether it merely portends wider discrepancies between company and supervisory models going forward.

DFAST 2013: annual vs. mid-cycle capital dilution and Tier 1 common minimum ratios

	Capital dilution – in BPS (average)				Stressed Tier 1 Common minimum (median)			
	Annual (supervisory-run)	Annual (company-run)	Mid-cycle	Trend (between company-run tests)	Annual (supervisory-run)	Annual (company-run)	Mid-cycle	Trend (between company-run tests)
Universal banks	400	320	175	▼	6.9%	8.0%	8.8%	▲
Investment banks	775	585	290	▼	5.8%	7.7%	9.2%	▲
Custody banks	265	435	240	▼	13.0%	11.3%	11.8%	▲
Regional banks	222	124	150	▲	8.2%	9.1%	9.2%	▲
All firm-types	**328**	**253**	**185**	▼	**7.8%**	**8.6%**	**9.2%**	▲

Fed expectations: Raising the bar going forward

The Capital Planning Guidance released by the Fed in August 2013 covered a wide range of process, governance and control related matters while discussing firms' stress loss estimation methodologies for credit, market and operational risks, and PPNR modelling. It goes into some detail regarding important topics such as risk segmentation, sensitivity analysis, use of external data, model uncertainty, as well as expert judgment and considerations for scenario assumptions. While a range of practices remains in the industry, our view is that this guidance helps to clarify best practices and will lead the Fed to raise its expectations for firms' modelling, scenario selection, and documentation of key decisions and assumptions.

The impact on firms is twofold: First, this guidance provides a glimpse into the supervisory-run models as it more clearly outlines the Fed's thinking on modelling techniques. Second, more clarity will lead to the inevitable progressive migration toward the best practices outlined by the Fed and may in many cases require significant efforts to redevelop models, (re)validate model results, improve documentation, and streamline and make more transparent model risk management programs.

The below table outlines the Fed's seven principles and best practices of an effective capital adequacy process:

	Fed principle	Best practice
Foundational risk management	The firm has a sound risk measurement and risk management infrastructure that supports the identification, measurement, assessment, and control of all material risks arising from its exposures and business activities.	Firms should have risk identification processes that are systematic and repeatable to ensure that all risks are transparently accounted for, including an assessment of assumptions about risk reduction, when assessing capital needs. Strong practices include standardized processes through which senior management regularly updates risk assessments, monitors risk exposures, and captures changes in the firm's risk profile under a variety of stressful situations.
Internal controls	The firm has robust internal controls governing capital adequacy process components, including policies and procedures; change control; model validation and independent review; comprehensive documentation; and review by internal audit.	Firms should review controls, demonstrate adherence to policies and procedures on an integrated basis, and ensure consistent application (including internal audit, independent model validation, MIS, and documentation).
Governance	The firm has effective board and senior management oversight of the capital adequacy process ("CAP"), including periodic review of the firm's risk infrastructure and loss- and resource-estimation methodologies; evaluation of capital goals; assessment of the appropriateness of stressful scenarios considered; regular review of any limitations and uncertainties in all aspects of the CAP; and approval of capital decisions.	Firms should provide timely information to its board, at least quarterly, so that the board can evaluate the appropriateness of scenarios, and have a sufficient understanding of the key limitations, assumptions and uncertainties within the capital planning process, in order to provide an effective challenge before making capital decisions. Firms should document key decisions and develop remediation plans for identified weaknesses.
Capital policy	The firm has a comprehensive capital policy and robust capital planning practices for establishing capital goals, determining appropriate capital levels and composition of capital, making decisions about capital actions, and maintaining capital contingency plans.	Firms should explain how the capital planning practices align with maintaining a strong capital position through periods of severe stress. Policies should include capital goals and targets, early warning triggers, and contingency capital plans.

	Fed principle	Best practice
Scenario design	Firms should define scenarios specific to its business and risk profiles and include idiosyncratic risk not included in the supervisory scenario. The firm should have a clear definition of available capital resources and an effective process for estimating available capital resources (including any projected revenues) over the same range of stressful scenarios and environments used for estimating losses.	Although each firm is required to submit only one firm-specific stress scenario for CCAR, firms should develop a suite of scenarios that collectively capture their material risks and vulnerabilities under a variety of stressful circumstances and should incorporate them into their overall capital planning processes, and at the same time they should not feature assumptions that specifically benefit the firm. The scenarios should be comprehensive and supported by clear narratives.
Effective loss estimation	The firm has effective processes for translating risk measures into estimates of potential losses over a range of stressful scenarios and environments and for aggregating those estimated losses across the firm.	Management needs to understand the uncertainties around their estimates, including the sensitivity of the estimates to changes in inputs and key assumptions. Overall, firms' estimates of losses, revenues, and expenses under each of the scenarios should be supported by empirical evidence, and the entire estimation process should be transparent and repeatable. Aside from model specifics, key points in the guidance include views on risk segmentation, use of external data, conservatism, management overlays, assumptions regarding management actions to reduce risk ex-ante, and lastly transparency on model limitations.
Assessing capital adequacy impact	The firm has processes for bringing together estimates of losses and capital resources to assess the combined impact on capital adequacy in relation to management's stated goals for the level and composition of capital.	Firms should have a tightly integrated process to ensure appropriate relationships among the scenario conditions, losses, revenue, expenses, and balances, and a well-established process for aggregation of these results and risk-weighted asset ("RWA") estimates. Firms that have been more effective at implementing such processes have established centralized groups with responsibility for aggregation, governance and controls, ensuring consistency and documenting adjustments.

What should firms do next?

While the August 2013 Capital Planning Guidance addresses issues in a siloed manner, firms should be cognizant of the near term and longer term implications of the continued onslaught of new regulations, as well as of rising supervisory expectations for CCAR.

Near term implications

The expected issuance of final Enhanced Prudential Standards (EPS) by year-end 2013 will bring a host of other process requirements and related supervisory expectations, particularly related to liquidity risk management.[11] Under the final EPS, the reach of capital planning and liquidity risk management requirements will extend to foreign banking organizations and to systemically important nonbank financial companies.

Furthermore, the recent finalization of Basel III capital rules[12] and its implementation timeline will overlap with the forward time horizon captured within CCAR and DFAST, reducing the capital flexibility of those firms that are more sensitive to Basel III (e.g., universal banks, investment banks, and custody banks). As such, regulators will need to address existing capital planning regulations which will place further strains on covered firms' (i.e., domestic firms over $50 billion) functions and processes supporting regulatory capital and risk-

[11] See PwC's *FS Regulatory Brief, US regulatory outlook: second half of 2013 – Final enhanced prudential standards and Basel III rules* (June 2013).

[12] See PwC's *FS Regulatory Brief, Basel III capital rules finalized by Federal Reserve: But much more to come for the big banks* (July 2013).

weighted asset calculations. It is expected that the Fed and other banking regulators will shortly release guidance to firms facing this issue.

Longer term implications

The resonating theme of the Capital Planning Guidance is that firms have more work in front of them to meet supervisory expectations. To achieve these objectives, firms should critically evaluate the current state of their process management efforts, data management framework, and systems infrastructure to: (a) ensure that CCAR lessons-learned are appropriately applied, and (b) identify where additional enhancements are necessary to meet other EPS requirements. The degree of improvement needed is largely dictated by the complexities of the firm's product base, legal entity structure, and global operations. Addressing the following will aid firms in achieving a more sustainable framework relative to regulatory requirements, supervisory expectations, and internal needs.

Process management: The use of well-developed workflow tools can provide senior management and directors with a transparent view of the end-to-end mapping of stress testing, risk identification, and data processing within the firm. Furthermore, these tools enhance the standardization of processes and governance across lines of businesses (or control functions) to address potentially duplicative efforts (and substitute poor processes in some areas of the institution with higher quality ones from others).

When implementing workflow tools, it is important to clearly document the responsibilities of those functions supporting stress testing and capital planning. It is also important to document these functions' internal control processes, particularly as they relate to data sourcing, model development and validation, and risk and exposure reporting.

Data management: Data management includes data production, storage, transformation, and reporting. Quality data management is critical to a firm's ability to analyze drivers of business performance (and, consequently, expected capital distributions), and to strengthen stress testing capabilities. Standardizing processes around centrally managed data collection and reporting mechanisms requires an enterprise-wide data strategy and governance structure that supports increased accuracy and consistency of information.

Systems infrastructure: Data management (and effective risk identification reporting) requires a systems technology framework that is well-integrated across the firm and allows for efficient and timely data aggregation. At the same time, the systems infrastructure must retain the flexibility to target data needed for evolving capital planning and stress testing requirements (relative to changing economic conditions and the strategic direction of the firm).

When improving systems infrastructure, improvements should be sequenced into manageable segments. Furthermore, changes to processes and to output (e.g., risk exposures and stress test results) must be transparent to senior management and directors, given their accountability. Finally, firms' integration of disparate data elements (e.g., position information, risk exposure, and revenues) should be evaluated and strengthened.

Additional information

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