AFR Americans for Financial Reform

February 2, 2018

Ms. Ann Misback, Secretary
Board of Governors of the Federal Reserve System
20th Street and Constitution Avenue, NW
Washington, DC 20551

Docket No. OP-1586; OP-1587; OP-1588

Re: Federal Reserve Board request for comment on the package of proposed changes to the supervisory stress testing framework

Dear Ms. Misback,

On behalf of Americans for Financial Reform (AFR), thank you for the opportunity to comment on this package of proposals, which include a proposal on enhanced disclosure of stress test models (OP-1586), a proposed revision of the stress testing policy statement (OP-1587), and a new policy statement on the scenario design framework for stress tests (OP-1588).[1]

Below, we first offer a general assessment of stress testing, and then comment in more detail on each proposal.

Overview of Stress Testing

This comprehensive package of proposals offers the opportunity for a broader assessment of stress testing, its strengths and weaknesses as a central element of capital regulation, and how it might be improved going forward.

There is general agreement that the original Federal Reserve 2009 crisis-era Supervisory Capital Assessment Program (SCAP) stress tests were a successful supervisory exercise. These stress tests, conducted during the worst of the crisis and coupled with a promise of government support to banks linked to stress test findings, were successful in restoring market confidence by providing better information regarding unrecognized losses on bank portfolios.

However, as many have pointed out since then, such "wartime" stress tests conducted during a financial crisis are quite different than the challenges presented by ongoing "peacetime" stress tests used as a supervisory tool in normal times.[2] In stress tests conducted during a financial crisis, there is some understanding of the specific market pressures causing the financial crisis,

[1] Americans for Financial Reform is an unprecedented coalition of more than 200 national, state and local groups who have come together to reform the financial industry. Members of our coalition include consumer, civil rights, investor, retiree, community, labor, faith based and business groups. A list of AFR members is available at http://ourfinancialsecurity.org/about/our-coalition/

[2] Schuermann, Til, "Stress Testing in Wartime and in Peacetime", January 24, 2016. Available at SSRN: https://ssrn.com/abstract=2735895 or http://dx.doi.org/10.2139/ssrn.2735895

and the issue is credibly sizing the losses that could eventually occur from this scenario. Furthermore, there is usually strong political support for forcing banks to recognize losses from the emerging or ongoing crisis. As shown by the less successful European banking stress tests conducted in 2009 and 2010, these factors are not always enough to guarantee a successful "wartime" stress test, but they certainly make such stress tests more likely to be effective.

In contrast, using "peacetime", non-crisis stress tests as a standard tool of capital regulation raises more complex issues. Scenario selection becomes critical, including specific assumptions about how asset or trading markets are likely to be affected by broad macro scenarios. But the enormous range of possible scenarios means there is an unavoidably arbitrary aspect to such selection. There is less political support for aggressive scenarios that create significant losses for banks, and more pressure to make loss forecasts for stress tests routine and stable so that banks can engage in predictable capital planning.

Yet if stress test loss modeling becomes routine and predictable, stress testing becomes less dynamic and more similar to other forms of static capital regulation such as capital charges on risk-weighted assets. A stress test that was substantively unchanging from year to year, and where transparent and predictable loss factors were applied to assets in a routine stress scenario, would simply lead banks to hold capital in line with well-understood stress test model predictions for their portfolio. Such model predictions would be equivalent to known risk weights on portfolio assets. Just as banks do with risk weights, they would adapt their portfolios to regulatory stress testing models, investing more heavily in assets that are predicted to have lower losses and taking on tail risks that do not materialize in typical stress scenarios.[3] The benefits of stress testing as a dynamic forward-looking process that could reflect changes in financial risks over the economic cycle would be lost.

Demands by banks that stress tests be made "fully" transparent and predictable to the companies they affect are effectively demands that stress testing be downgraded into another form of static risk-based capital regulation. The Board should not accede to the desire for predictability in capital planning and agree to make stress tests a routinized compliance exercise. Stress tests should remain "surprising". Both macro scenarios and modeling choices down to the asset level should change from year to year to reflect current market vulnerabilities. Regulators should fully exploit the potential of stress testing to "lean against the wind" in sometimes unexpected ways and counter-balance the inherently pro-cyclical nature of capital regulation. Providing a form of counter-cyclical regulation that moderates destabilizing financial cycles of boom and bust should be an explicit goal of a stress test regime.

These are not simply theoretical concerns. There are some disturbing signs that in recent years banks have begun to adapt to CCAR stress testing, and that testing has become more routinized and projected losses have declined. In a 2015 paper, the economist Til Schuermann found that

[3] Jarrow, Robert A., "Capital Adequacy Rules, Catastrophic Firm Failure, and Systemic Risk", Johnson School Research Paper Series No. 5-2012, June 14, 2012 Available at https://ssrn.com/abstract=2084200. This paper describes the mathematical similarities between stress tests, capital adequacy ratios, and value-at-risk models where stress test scenarios do not incorporate tail risks.

banks were managing capital buffers more closely to projected stress test results, which were becoming more predictable.[4]

Over the years since, the level of CCAR stress on bank capital, as measured by stress test losses, has visibly declined. An AFR analysis performed after the 2017 stress tests, the first in which all banks passed the test, found a long term decline in the stringency of the CCAR tests. (The full AFR analysis is attached as an appendix to these comments).

Specifically, our analysis found that:

- Between 2015 and 2017, projected CCAR losses due to the stress scenario have steadily declined, from 510 basis points of risk-based capital in 2015 to 330 basis points in 2017.

- Over this period, capital distributions permitted to shareholders have also steadily increased.

- Average and peak losses projected under the stress scenario in 2017 were significantly lower than the losses observed during the 2008-10 financial crisis.

Notably, these shifts occurred even as the macroeconomic scenario for the stress tests become more stringent, with greater declines in GDP and greater increases in unemployment in 2017 than 2015.[5]

There could be a number of reasons for the decline in the "stressfulness" of the stress tests relative to past years and to financial crisis losses. These include changes in bank portfolios, either as a result of optimizing to predicted stress test capital charges or due to shifts in the economic cycle, changes in regulatory modeling decisions that are not reflected in the overall macro scenario, or both. But the apparent decline in the stringency of stress tests is concerning.

It is especially noteworthy that projected capital losses due to the stress tests have been declining as the economic cycle is turning up and economic growth is increasing. This implies that there may be some pro-cyclicality in elements of stress test models or policy decisions that are not reflected in the overall macro scenario, which has not become more lenient.

Below, we provide more detailed comments on each proposal.

[4] Gutierrez Gallardo, German and Schuermann, Til and Duane, Michael, "Stress Testing Convergence", July 28, 2015. Available at https://ssrn.com/abstract=2636984

[5] For details of macroeconomic scenarios, see Table 1 of the Scenario Design proposal for stress testing, Docket Number OP – 1588.

Comments on Enhanced Disclosure of Stress Test Models – Docket OP-1586

Costs and Benefits of Stress Test Discloosures

Stress test modeling disclosures create both costs and benefits. A potential cost of very detailed disclosures is that banks may over-adjust their portfolio decisions to the parameters of stress test models. This would exacerbate the problem of "model mono-culture" in which banks are encouraged to invest excessively in assets or strategies whose risks have been underestimated by regulatory models, and under-invest in situations where risks are overestimated by regulators.

Excessive disclosures may also compromise the independence of stress tests and create opportunities for banks to lobby to change specific model parameters to prevent modeling decisions that would project losses on their balance sheets. In the case of stress tests performed at the Federal Housing Finance Agency (FHFA) prior to the financial crisis, the effect of such politicization was disastrous, as it basically prevented stress tests of the GSEs from adjusting to changing market conditions.[6]

Permitting stress test models to be issued as proposals under notice and comment rules in the Administrative Procedures Act would be particularly harmful to stress test independence. Such a process would permit regulated banks to get extensive advance notice of model details and also to challenge specific parameters in court. This would create what would almost amount to veto power for regulated institutions as regards specific parameters and decisions in stress test models, or at least empower regulated to institutions to procedurally delay the implementation of model elements they disapproved of for a very significant period.

But there are also significant benefits to public transparency around stress test models. Without such transparency, it will be difficult or impossible for the public to understand whether stress testing is genuinely "stressful", in the sense of using scenarios and modeling assumptions that test the durability of the financial system to unexpected but plausible shocks to asset prices and trading strategies. Transparency may also lead to valuable informational input and feedback for regulators from academics, market analysts, and other unbiased observers. Managed correctly, public transparency for a variety of stakeholders can also assist in creating public and political support for rigorous stress testing.

We believe the benefits of stress test model disclosures are maximized and the costs are minimized when:

1) such disclosures take place after stress tests are completed (post-test as opposed to pre-test disclosures), and

2) stress test modeling assumptions vary from year to year to reflect current market conditions, and test the durability of bank portfolios to unexpected shocks.

[6] Frame, W. Scott, Kristopher Gerardi, and Paul Willen, "The Failure of Supervisory Stress Testing: Fannie Mae, Freddie Mac, and OFHEO", Federal Reserve Bank of Atlanta Working Paper 2015-3, March, 2015. Available at https://www.frbatlanta.org/research/publications/wp/2015/03.aspx

Post-test transparency minimizes opportunities for banks to either adjust their portfolios or attempt to change specific model parameters or assumptions using political pressure. Post-test transparency may of course also be mined for predictions of the next year's modeling practices. But if modeling assumptions tend to shift from year to year, post-test disclosure will be less informative as to next year's modeling assumptions, and banks will adapt less to the model. In contrast, if stress test modeling assumptions are very stable, then post-test disclosure of each year's model assumptions will be highly informative as to the next year's model assumptions.

Recommendation for Annual Stress Test Disclosure Conference / Convening

We also believe that the net benefits of stress test disclosures are maximized when such disclosures are not directed solely at regulated entities, but are designed for maximum inclusion of the public and unbiased experts who are not tied to regulated entities. The costs of stress test disclosures are due to the ways in which they can distort decision making by regulated entities, or compromise stress test independence by empowering regulated entities to manipulate the tests. Many of the benefits are created by public involvement, including independent feedback on analytic decisions and enhanced political support for more rigorous stress testing.

In practice, stress testing is far more visible to the regulated entities subject to it, as regular contact and discussion with regulators concerning the details of stress tests is necessary during the testing process. Unless regulators choose to engage in active outreach to the public to counterbalance this structural advantage, stress tests will be far more transparent to regulated insiders than the public.

We recommend that the Board convene an annual stress test conference to discuss current and upcoming scenario and modeling choices in stress testing, as well as the role of stress testing in financial regulation more broadly. The goal of such a conference should not simply be to discuss technical modeling issues, but to discuss with the public and interested experts the policy choices made in stress testing and how these choices can make the financial sector and indeed the broader economy more stable and less vulnerable to damaging financial instability.

Currently, the Boston Federal Reserve holds an annual conference on stress test modeling, with a focus on technical presentations regarding current cutting edge techniques in the field. This conference is valuable, and could serve as the nucleus for the kind of convening suggested here. But a broader conference on stress test transparency would involve outreach to a broader range of invitees and would include a more general discussion of the policy and modeling choices involved in stress testing.

Assessment of Specific Proposed Disclosures

In our view, the model disclosures laid out in this proposal are likely to be beneficial in the aggregate and do not risk significant costs of the type discussed above.

As we understand the proposal, these disclosures would be given on a post-test basis. The disclosures regarding the structure of the loan loss modeling are fairly generic and do not contain an excessive level of detail. The proposal to disclose post-test projected loan losses by category

of loan, either through hypothetical portfolios or through other means, are more detailed. However, they are critical in helping the public understand whether macro scenarios lead to realistic levels of loan losses. Overall, we believe that the proposed disclosures would be helpful to organizations like ours, to analysts, and to academics in understanding whether stress tests have been well conducted.

Recommended Additions to Proposed Disclosures, Including Market Shock Disclosures

The usefulness of the projected loan loss disclosures would be enhanced if the Board also disclosed two additional items of information with them:

- The first would be aggregated portfolio information for major banks by type of loan, so that the public could understand which types of loans were most important drivers of projected stress test losses. Many banks voluntarily disclose portfolio loss rates for different types of loans already, so this should not be a major step.

- It would also be useful if the Board accompanied projected loan loss rates with historical data on actual loan loss rates for each class of loan in previous historical stress periods. This would be useful in assisting the public in interpreting the results, and does not raise any confidentiality concerns.

We also recommend that the Board expand the kind of disclosures laid out for loan loss modeling to other areas of stress testing where we believe disclosures are inadequate.

In particular, we recommend expanded disclosures for the results of the aggregate market shock, which determines trading losses at banks with significant trading books. Currently market shock disclosures are limited to the risk factor changes that compose the market shock. Banks also disclose their total aggregate losses for the trading and counterparty shock combined.

However, the conversion of the market shock risk factors to projected monetary losses is performed by the bank itself using its own internal models, as the Board apparently does not have the resources to model the impact of risk factor changes on bank trading positions. The exclusive use of these internal models would seem to clash with the principle of stress test independence and create what is effectively a "black box" process from the public perspective. This disclosure proposal does not appear to recommend any additional disclosure regarding the market shock calculation.

We realize that it would probably be impractical and would raise confidentiality concerns to release the actual internal bank models. However, disclosures for the market shock could still be significantly improved in the following manner:

- Bank trading losses should be reported separately from the counterparty shock losses, so that the public can understand which losses come from the counterparty shock and which from the trading scenario.

- Bank trading losses should be disclosed at the trading desk level. The current practice of releasing a single aggregated figure does not give any information as to which trading markets were most severely impacted by the shock. Banks are already required to gather information at the trading desk level to comply with the Volcker Rule, and release some information as to the desk structure of their trading operations in the Basel Pillar 3 disclosures.[7] We would suggest a fairly detailed mapping of trading desk structure corresponding to earlier Basel Pillar 3 disclosure proposals, and also that losses be reported at the trading desk level both as an absolute figure and as a percentage of inventory.[8]

- Although it is impractical to release actual bank models, some qualitative information as to the type of internal bank model used to project losses should be shared with the public. It is especially important to have some understanding of how tail risk losses were modeled. For example, was an expected shortfall approach used? How conservative was the loss modeling approach?

In addition, information should be shared as to the treatment under the Market Shock scenario of available-for-sale securities that are typically marked to market by banks. There is an argument that the Market Shock or a similar scenario should apply to all securities that are marked to market, unless it is clear that banks will be permitted to diverge from mark to market accounting in a time of economic stress.

Reliance on Credit Ratings Should Be Avoided in Projecting Losses for Securitized Products

The model descriptions in this disclosure proposal make clear that the Board relies on credit ratings issued by companies such as Moodys and Standard and Poors (National Recognized Statistical Ratings Organizations, or NRSROs) as an important independent variable in projecting losses for both corporate bonds and securitized products.

As is well known, the failure of NRSROs (credit rating agencies) to properly assess the risks of securitized products was a major driver of the 2008 financial crisis. As the Financial Crisis Inquiry Commission (FCIC) stated in its report conclusions:[9]

> "credit rating agencies were essential cogs in the wheel of financial destruction. The three credit rating agencies were key enablers of the financial meltdown. The mortgage-related securities at the heart of the crisis could not have been marketed and sold without their seal of approval. Investors relied on them, often blindly. In some cases, they were

[7] Bank for International Settlements, Standards: Pillar 3 Disclosure Requirements, Consolidated and Enhanced Framework, March, 2017. Available at https://www.bis.org/bcbs/publ/d400.pdf
[8] Bank for International Settlements, Consultative Document: Pillar 3 Disclosure Requirements, Consolidated and Enhanced Framework, March, 2016, https://www.bis.org/bcbs/publ/d356.pdf
[9] The Financial Crisis Inquiry Commission, The Financial Crisis Inquiry Report, January, 2011. Available at http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf . See also Permanent Subcommittee on Investigations, Wall Street and the Financial Crisis: Anatomy of a Financial Crisis, United States Senate Committee on Homeland Security and Government Affairs, April 13, 2011.

> obligated to use them, or regulatory capital standards were hinged on them. This crisis could not have happened without the rating agencies."

In fact, the performance of the NRSROs was so unreliable that Section 939A of the Dodd-Frank Act required regulatory agencies to remove references to commercial credit ratings and to instead substitute an independent standard for credit worthiness.

Whether or not the use of credit ratings in stress test models violates Section 939A, we believe that the Board should modify its procedures to reduce reliance on ratings as a predictor of performance, particularly for securitized products. While Dodd-Frank nominally introduced a number of reforms in the oversight of NRSROs, these reforms have been implemented in a flawed and incomplete manner.[10] Furthermore, none of the reforms implemented address the fundamental issue of the conflicts in the business model of ratings agencies, who are paid by the issuers of the securities they rate. Issues concerning ratings are especially salient in the area of securitized products, both due to the complexity of these products and the fact that individual issuers may issue numerous securitized products, making the business relationship with the issuer critical to the future revenue stream of the NRSRO.

We recommend that the Board significantly reduce its reliance on credit ratings, and increase internal capacity to understand features of securitized products that influence how such products respond to market stress. Had such capacity been in place prior to the financial crisis, then supervisors might have been able to better understand, for example, the flawed correlation assumptions in pre-crisis MBS and CDOs. The possibility of triggering liquidity backstops for supposedly off balance sheet products might also have been predicted.

This knowledge should be used to increase the sophistication of loss projections for securitized products. Currently, such projections appear to simply forecast impairment based on historical losses in products with similar asset classes and ratings. However, changes in the design and terms of complex securitized products could limit the applicability of such historical projections. While we realize that the Board does not have the resources for individually rating all securities, there could be significant benefits from research on the design of securitized products, supported by more detailed information gathered from banks on the features of such products.

Comments on the Stress Testing Policy Statement – Docket OP-1587

There are several broad principles included in the stress testing policy statement that we strongly support, several that we have concerns about, and we would also recommend adding an additional principle (counter-cyclicality) to stress test model policies.

We Support the Principles of Independence, Conservatism, and Credit Supply Maintenance

We strongly support the maintenance and aggressive implementation of these principles.

[10] Gaillard, Norbert and William J. Harrington, "Efficient, Commonsense Actions to Foster Fair Credit Ratings", *Capital Markets Law Journal*, Volume 11, No. 1, 2016.

Principle 1.1. Independence. The striking failure of bank internal models during the financial crisis showed the need for better model risk governance and for a strong independent check on bank models.[11] The abuse of internal model governance seen in the JP Morgan London Whale trades in 2012 showed that some of these issues continued after the crisis.[12] Although regulatory models are not perfect, regulators do not face the immediate profit-related conflicts of interest that banks may face in validating their own internal models. The discipline of doing independent regulatory modeling of bank risks and losses is also beneficial to regulators in helping them perform supervisory oversight of bank internal modeling.

Even given the Board's efforts to maintain the principle of independence, stress testing is still heavily reliant on bank internal modeling. In the previous section we discussed the reliance on bank internal modeling in determining market shock losses. Analysts have also observed that there are some 200 line items in the data reported to the Board in the FR Y-14A for CCAR analysis that require model estimation by reporting banks.[13] Such reliance is probably to some degree unavoidable. But absent a strongly held principle that stress testing should be a truly independent check on internal bank risk assessments it would become even more significant.

Principle 1.6. Conservatism. The massive economic costs of a financial collapse, as well as the strong political pressure from powerful industry interests for more lenient tests, argue for a commitment to erring on the conservative side in assessing risks to bank solvency. Serious and independent cost-benefit analyses consistently show that, based on current levels of bank capital, there is little to no risk of creating large net social costs by practicing conservative risk assessments during stress testing.[14] We strongly endorse the principle of conservative risk assessment.

But as discussed in the introductory section above, the decline in the projected stress test losses during recent years raises questions as to whether this principle is being fully observed in practice.

Model Policy 2.7. Credit Supply Maintenance. As the Proposal observes, the Board's goal of ensuring that banks continue to perform crucial credit intermediation functions during a downturn requires the assumption that banks will not meet capital ratio goals by shrinking their balance sheets. The requirement that banks maintain or increase their current balance sheet size during the projected stress test period is certainly a necessity to enforce this assumption. Absent this requirement, the Board would essentially be building a credit crunch into its stress test projections. The experience of stress tests before this requirement was put in place in 2014 shows

[11] Brown, Jeffrey, Brad McGourty and Til Schuermann, Til, "Model Risk and the Great Financial Crisis: The Rise of Modern Model Risk Management", Wharton Financial Institutions Center Working Paper No. 15-01, January 7, 2015. Available at SSRN: https://ssrn.com/abstract=2557213
[12] United States Senate Subcommittee on Investigations, "JP Morgan Chase Whale Trades: A Case History of Derivatives Risks", March 15, 2013. http://online.wsj.com/public/resources/documents/JPMWhalePSI.pdf
[13] Brown, *op. cit.,* p. 7
[14] Firestone, Simon and Lorenc, Amy and Ranish, Benjamin, "An Empirical Economic Assessment of the Costs and Benefits of Bank Capital in the US" FEDS Working Paper No. 2017-034, March 31, 2017. Available at https://ssrn.com/abstract=2946814

that banks will frequently attempt to meet capital minimums by projecting that their balance sheets will shrink during a recession.[15]

However, we do not believe that simply requiring that banks maintain current asset size during a projected stress period is sufficient to ensure that banks are sufficiently capitalized to properly serve their credit intermediation function during severe stress. First, total commercial bank asset size has typically increased even over recessionary periods, indicating that some increase in bank portfolios is necessary to fuel economic growth.[16] Second, a number of factors may lead to unplanned increases in bank portfolio size during a downturn, including greater use of undrawn loan commitments and the sudden shutdown in markets for the sale and distribution of loans. It would thus be safer and more conservative to assume some increase in asset size during a recession.

Further, the failure to include capital buffers, such as the G-SIB buffer, in stress tests also calls into question the commitment to the principle of credit supply maintenance. In an actual economic downturn, banks will have an incentive to maintain capital buffers in order to continue paying out dividends and bonuses, as well as encourage market confidence. A bank which is only able to maintain a capital ratio below the full buffer requirements based on a stable balance sheet will therefore have a significant incentive to reduce its balance sheet in an actual recession. Including capital conservation buffers in stress test requirements will encourage credit supply maintenance. The Board should include capital buffers in its stress test scenarios, as the failure to maintain such a buffer in an actual stress scenario would create significant incentives to reduce the balance sheet.

Principles Involving Stability, the Phasing in of Material Model Changes, and Limiting Reliance on Past Outcomes May Lead to Excessively Static Stress Tests

We are concerned that several of the policy principles here will hamper the ability of the Board to use stress testing to respond rapidly to changes in economic cycles, even if such response is called for. While these principles are reasonable in many circumstances, in others they may not be. Stating them as overarching principles could reduce needed flexibility and lead to stress tests that are too static and not responsive to changes in market conditions.

Principle 1.5. Robustness and Stability. In this principle, the Board states its intent that supervisory model projections should be stable and should not vary according to "transitory factors" or "temporary changes". It also states that newly available data should not be the "principal driver" of changes in results.

However, the financial system and the economy are not stable. Financial risks can emerge rapidly and single years of data can provide important advance warning of changes in model relationships. For example, FICO scores for subprime borrowers increased between 2000 and 2006. But the performance of the later loan cohorts was radically worse than earlier cohorts, and

[15] Federal Reserve Board of Governors, "Federal Reserve Independent Balance Sheet and RWA Projections", December 16, 2013. Available at https://www.federalreserve.gov/bankinforeg/independent-projections-letter-20131216.pdf

[16] See bank assets time series available at https://fred.stlouisfed.org/series/TLAACBW027SBOG

FICO scores became significantly less predictive of loan performance.[17] If a stress testing system had been in place prior to the financial crisis, the ability to rapidly incorporate e.g. 2006 loan performance data could have been very important in ensuring that banks retained earnings against upcoming stress losses.

Principle 1.5 is stated in a fairly general way, and, all other things equal, stability might be a desirable quality in stress testing. But especially combined with other supervisory model policies stated in the Proposal elevating stability to a central principle is likely to reinforce a tendency toward excessively static stress tests.

Modeling Principle 2.3, Phasing in of Highly Material Model Changes and elements of **Modeling Principle 2.4, Limiting Reliance on Past Outcomes** would both delay the incorporation of material new data into the modeling process. Principle 2.3 requires that any change that affects model results in a significant way, apparently including the incorporation of newly available data, be phased in over a two year period. During the first year, only half the impact of the change would be included in the projection, and the full impact would be incorporated in the second year. Principle 2.4 limits reliance on past outcomes, including outcomes in the recent past, by sharply restricting the use of modeling techniques that reflect recent changes in asset level performance (e.g. loan vintage fixed effects).

Policies that limit reliance on data from the recent past can be of value insofar as they prevent over-adjusting stress test models to recent periods that show low volatility in asset prices and benign market conditions. However, we are concerned that the blanket application of these policies may lead to stress tests that are too static and are delayed in reflecting turns in the economic cycle. Had a stress test regime been in place in 2007, the combination of these policies would have made it significantly more difficult to incorporate the 2006 indicators of a severe approaching downturn.

Contrary to the emphasis on static stress testing in these principles, there are indications in other proposals that the Board recognizes that it may in some cases be necessary to rapidly incorporate new information and significantly change stress tests in a short period of time. Most notably, the proposal on Scenario Design states that it may be necessary to "add salient risks to the severely adverse scenario" based on current market conditions.[18] The Scenario Design proposal discussion of formulating market shocks also mentions the need to introduce hypothetical elements based on current market conditions.

It is unclear how these elements would work with the emphasis on stability in the proposal on Stress Test Principles. For example, would a new salient risk added to the severely adverse scenario have to be phased in over two years, as required by Modeling Principle 2.3? Does the Robustness and Stability Principle 1.5 imply that such a new salient risk could not be the "principal driver of a change in results?" In any case, the fact that the various elements mentioned as part of scenario design are not elevated to the status of principles governing overall

[17] Sengupta, Rajdeep and Bhardwaj, Geetesh, "Credit Scoring and Loan Default", International Review of Finance, Vol. 15, Issue 2, pp. 139-167, June, 2015. Available at SSRN: https://ssrn.com/abstract=2613721

[18] Section 4.2.4 of the Proposal, in the discussion of "Approach for Formulating the Macroeconomic Assumptions for Scenarios", CFR 59543.

stress testing indicates that they will be given lower priority than principles which require more static stress test projections. We believe this would be a mistake. Stress test principles should give greater weight to the need to reflect emerging market risks.

The Board Should Add an Explicit Commitment to Counter-Cyclical Policy in Its Stress Test Policy Statement and Its Model Policies

There is broad consensus that financial system pro-cyclicality was a major contributor to the 2008 economic and financial crisis, and that the system of capital regulation contributed to that pro-cyclicality.[19] Accounting-based capital measures, and many measures used to set market risk capital such as Value at Risk (VAR), are inherently pro-cyclical. Such metrics are heavily influenced by current asset prices, which are systematically overstated in boom periods. Static risk weights on capital do not reflect such overpricing.

A major potential benefit of stress testing is that it can act as a counterweight to cyclicality, requiring banks to raise capital in boom times when it is easier to do so and ensuring that banks are adequately capitalized to provide financial intermediation during downturns and recessions. But doing so requires stress test scenarios and models that are dynamic and that actively incorporate assumptions that currently elevated asset prices and trading markets may revert to long-term historic trends or mean values.

Almost all the explicit discussion of counter-cyclicality in stress testing in these Proposals occurs in the Scenario Design proposal, which discusses the issue in the context of setting macro scenario variables such as unemployment and economic growth. The approach seems to be to ensure counter-cyclicality by choice of macro scenario variables, for example by assuming a greater increase in unemployment in periods where unemployment is low. However, the key question is how macro variables are converted into predicted stress losses at the asset level. As documented in the attached appendix, projected stress capital losses have declined steadily between 2015 and 2017, even though the projected unemployment rate increase grew over that period from 4 to 5.3%, and the projected decline in GDP increased from 4.7 to 6.6%.

We suggest incorporating counter-cyclicality as a stated principle governing stress testing policy as a whole, and also a stated policy governing model design. The explicit commitment to counter-cyclicality would help make clear the Board's commitment to dynamic stress testing that ensures that the financial system is robust to even rapid and unexpected economic downturns. It would also legitimate departures from more stable modeling assumptions at times when such departures were justified due to extremes in the economic cycle.

The inclusion of counter-cyclicality in modeling principles would encourage the design of models that incorporate counter-cyclical assumptions directly at the asset level. The models presented in the various proposals appear to model asset losses simply as a function of changes in macro scenario variables. Such models do not incorporate counter-cyclical assumptions. Absent adjustment, they would project that the impact of a change in a macro scenario variable will have a similar effect on asset values regardless of the current state of the asset market.

[19] Financial Stability Forum, "Report of the Financial Stability Forum on Addressing Pro-Cyclicality in the Financial System", April 2, 2009. Available at http://www.fsb.org/wp-content/uploads/r_0904a.pdf

In contrast, there are many examples of stress test models that directly incorporate counter-cyclicality into model design by assuming some form of mean reversion to historical trends in asset prices. For example, the Federal Housing Finance Administration (FHFA) has experimented for years with models that include countercyclical house price assumptions.[20] Another, more complex, example is the recent work on explicitly incorporating market valuation bubbles into credit risk assessment, with projected stress losses being greater during a market bubble.[21]

These models have the feature of automatically projecting greater losses when particular asset classes diverge from historical trends or appear to have particularly inflated values. This would encourage more capital to be raised during overheated markets, when it is easier to raise capital, and work to correct inflated measures of accounting capital during such periods. We suggest that the Board explore such counter-cyclical modeling options.

Comments on Stress Testing Scenario Design – Docket OP-1588

A number of issues related to scenario design have already been discussed in the previous section on stress testing principles. In particular:

- We support the principle of counter-cyclicality in scenario design. This principle mandates larger shocks to the macro variables for stress test scenarios conducted in a strong economy when cyclical systemic risks are high, and possibly smaller shocks when the economy is already weak or contracting. This approach appears to be included in the Scenario Design proposal.

  However, we believe that to ensure counter-cyclicality it is necessary to look beyond the broadest macro variables such as unemployment and economic growth and consider trend reversion in asset and trading markets in a more detailed way. We urge incorporating counter-cyclical principles into overall stress testing and model policy in order to do this.

- We support the inclusion of currently salient market risks in adverse scenarios, and indeed believe that such inclusion is critical if stress tests are to be sufficiently dynamic. As stated above, we believe that some modification to the proposed stress testing principles that strongly emphasize stable models and outcomes is needed to ensure that currently salient market risks are incorporated into stress tests as often or as forcefully as may be necessary.

[20] Smith, Scott and Jesse Weiher, "Countercyclical Capital Regime: A Proposed Design and Empirical Evaluation," *Federal Housing Finance Agency*, Working Paper No. 12-2, April, 2012. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2151484

[21] Jacobs, M., Jr.."The Impact of Asset Price Bubbles on Credit Risk Measures". *Journal of Financial Risk Management* **4**, 251–266 , November 30, 2015, http://doi.org/b4w7; Jacobs, M. Jr, "Asset Price Bubbles and the Quantification of Credit Risk Capital with Sensitivity Analysis, Empirical Implementation, and an Application to Stress Testing", *Journal of Risk Model Validation*, 11(4), December, 2017.

We Strongly Support the Proposed Inclusion of Changes in Wholesale Funding Costs in Stress Test Scenarios

There can be no doubt that changes in the cost and availability of funding, especially short-term wholesale funding, is a major feature of market stress on banks in the real world. Adding to an immense amount of previous descriptive and academic evidence, recent empirical research has found that challenges to bank solvency have a strong and rapid impact on bank funding costs, which in turn increase capital losses in a vicious cycle.[22] The current practice of simply not including these funding cost effects in stress scenarios is a glaring omission and one that is long overdue for correction.

Question number three asks which variables specifically should be used to represent changes to funding costs or availability in stress test scenarios. There is an extensive empirical literature on this, much of it summarized or referenced in the article cited in the previous paragraph. We will not attempt to analyze it here. But a sensible place to start would be with the various liquidity classifications used for the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR), which classify funding sources based on their stability under stress.

Supervisors could assume that liquidity sources with limited residual maturity that are classified as particularly likely to "run" – especially funding provided by other financial entities that monitor their counterparties closely – will increase in cost or become unavailable as capital losses increase. It would be reasonable to introduce some non-linearity in funding availability as a bank comes close to insolvency, meaning that banks with projected capital positions close to the regulatory minimum could experience a sharper increase in funding costs.

Modeling House Prices in the Macro Scenario

The proposal requests comment on the use of the ratio of house prices to per capita income as a metric for housing prices in the macro scenario. The use of per capita income does not assess the affordability of a home for the average family, as per capita income is not a distribution sensitive measure. It would be better to use the ratio of house prices to median income, or else a price to rent ratio in order to assess housing price costs relative to the costs of housing services.

Thank you for the opportunity to comment on these proposals. If you have questions, please contact AFR's Policy Director, Marcus Stanley, at marcus@ourfinancialsecurity.org or 202-466-3672. Thank you for your attention to this letter.

Sincerely,

Americans for Financial Reform

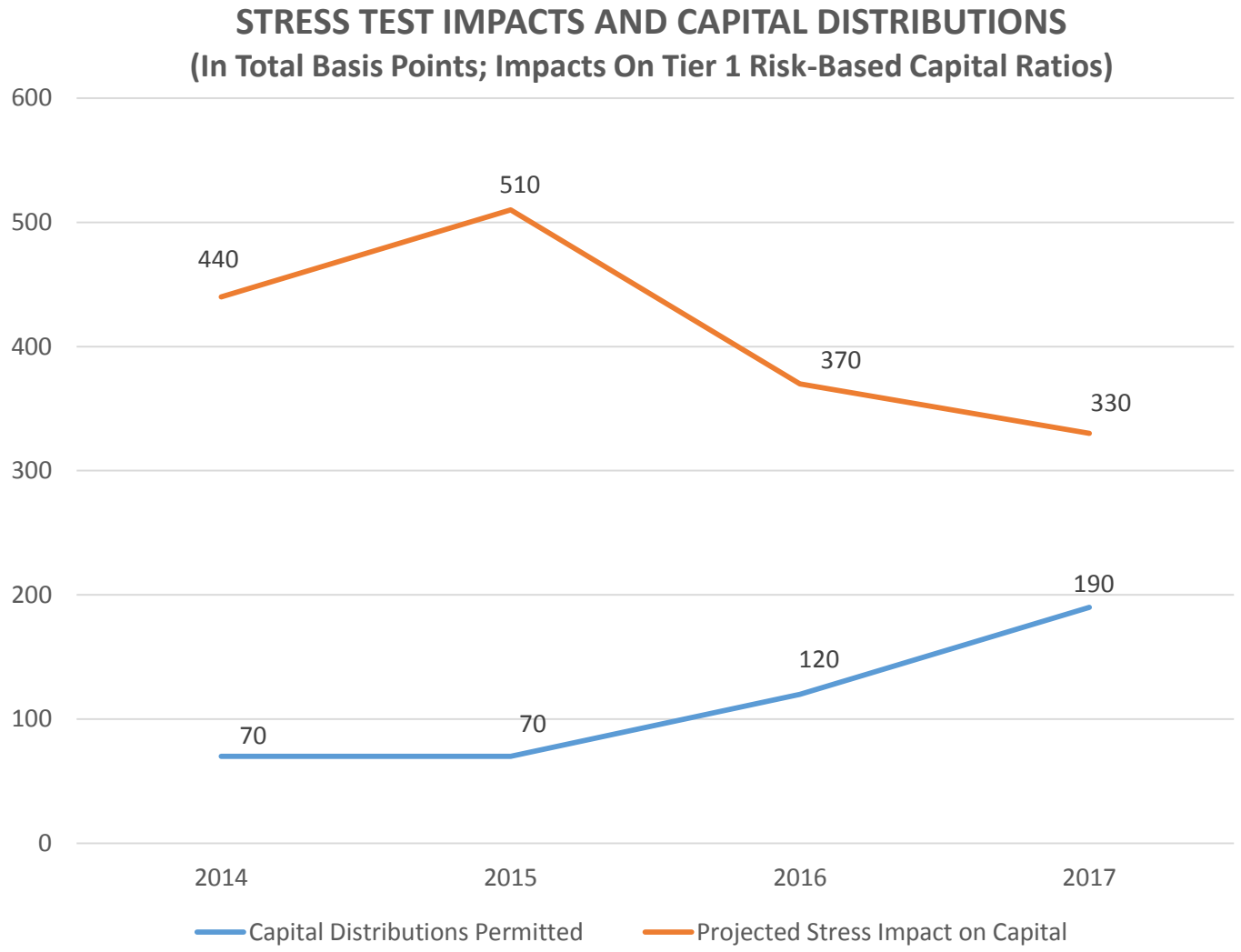
[22] Schmitz, Stephan, Michael Sigmund and Laura Valderrama, "Bank Solvency and Funding Costs: New Data and New Results", IMF Working Paper WP/17/116, May, 2017. Available at https://www.imf.org/~/media/Files/Publications/WP/2017/wp17116.ashx . Also, Dent, Kiernan, Sinem Hoke and Apostolos Panegiotopoulos, "Solvency and Funding Costs: Interactions at U.K. Banks", Bank of England Working Paper 681, October 13, 2017. Available at https://www.bankofengland.co.uk/working-paper/2017/solvency-and-wholesale-funding-cost-interactions-at-uk-banks

Appendix To Stress Test Disclosure Comment: AFR Assessment of 2017 Stress Test Results

The 2017 Stress Tests Appear Less Stressful Than Ever

- 2017 stress tests permitted banks to return more capital than ever before (190 basis points of risk-based capital).
- Stress models also had the lowest impact on bank capital recorded in recent years. The stress scenario reduced bank capital by just 330 BP.

Source and impacts: DFAST and CCAR releases from Federal Reserve, 2014-2017. Capital returns estimated by comparing projected DFAST risk-based ratios without capital distributions to CCAR ratios with capital distribution. Stress test impacts estimated by comparing starting risk-based ratios to minimum projected risk-based ratios during stress periods.



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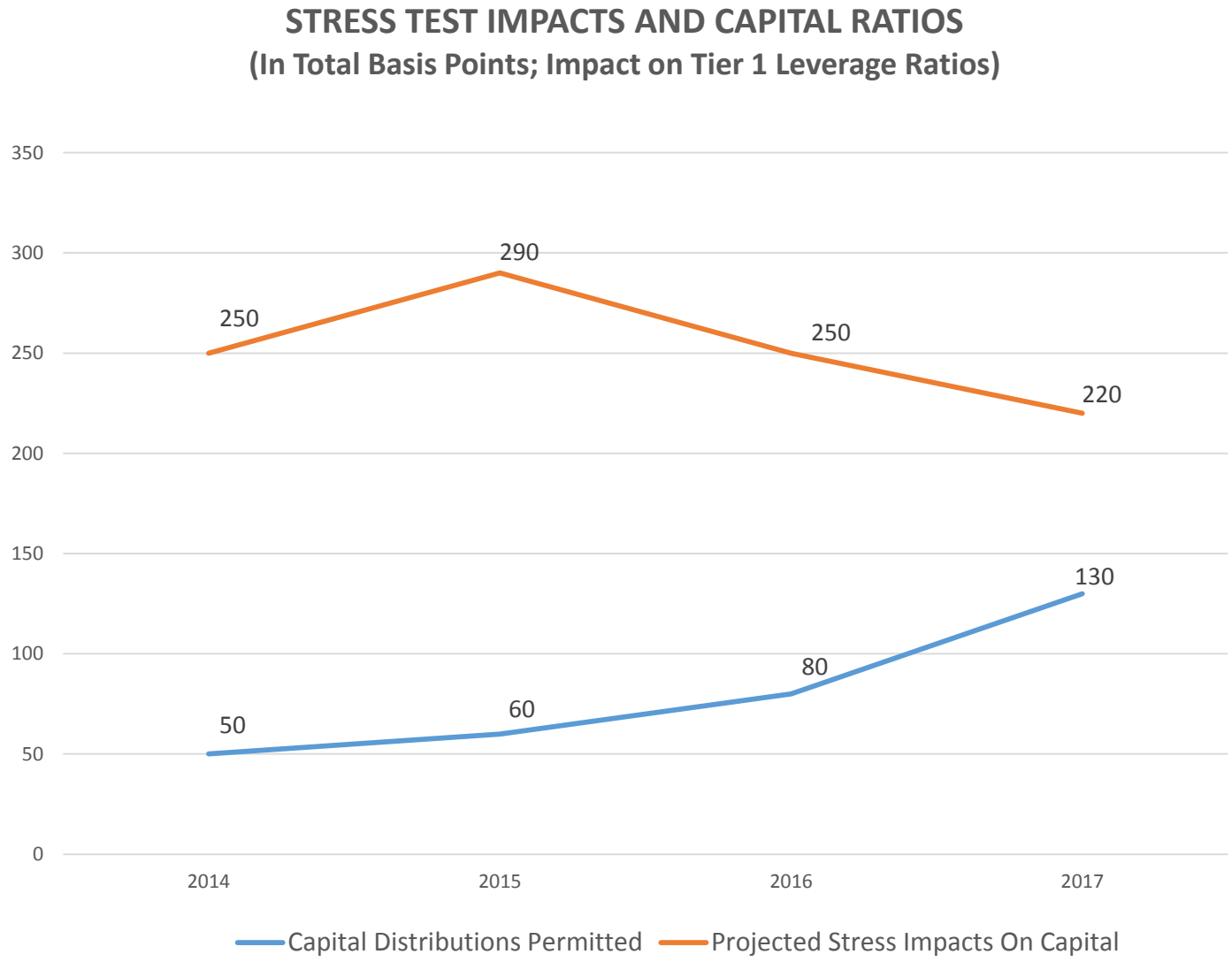
Similar Impacts for Leverage Ratios

- Findings are not due to changes in risk weights over the period.
- Returns as a fraction of leverage capital were at an all-time high (130 BP) and modeled stress was less "stressful" than ever (220 BP).

SOURCES AND NOTES: DFAST and CCAR releases from Federal Reserve, 2014-2017. Capital returns estimated by comparing projected DFAST leverage ratios without capital distributions to CCAR ratios with capital distribution. Stress test impacts estimated by comparing starting leverage ratios to minimum projected risk-based ratios during stress periods.



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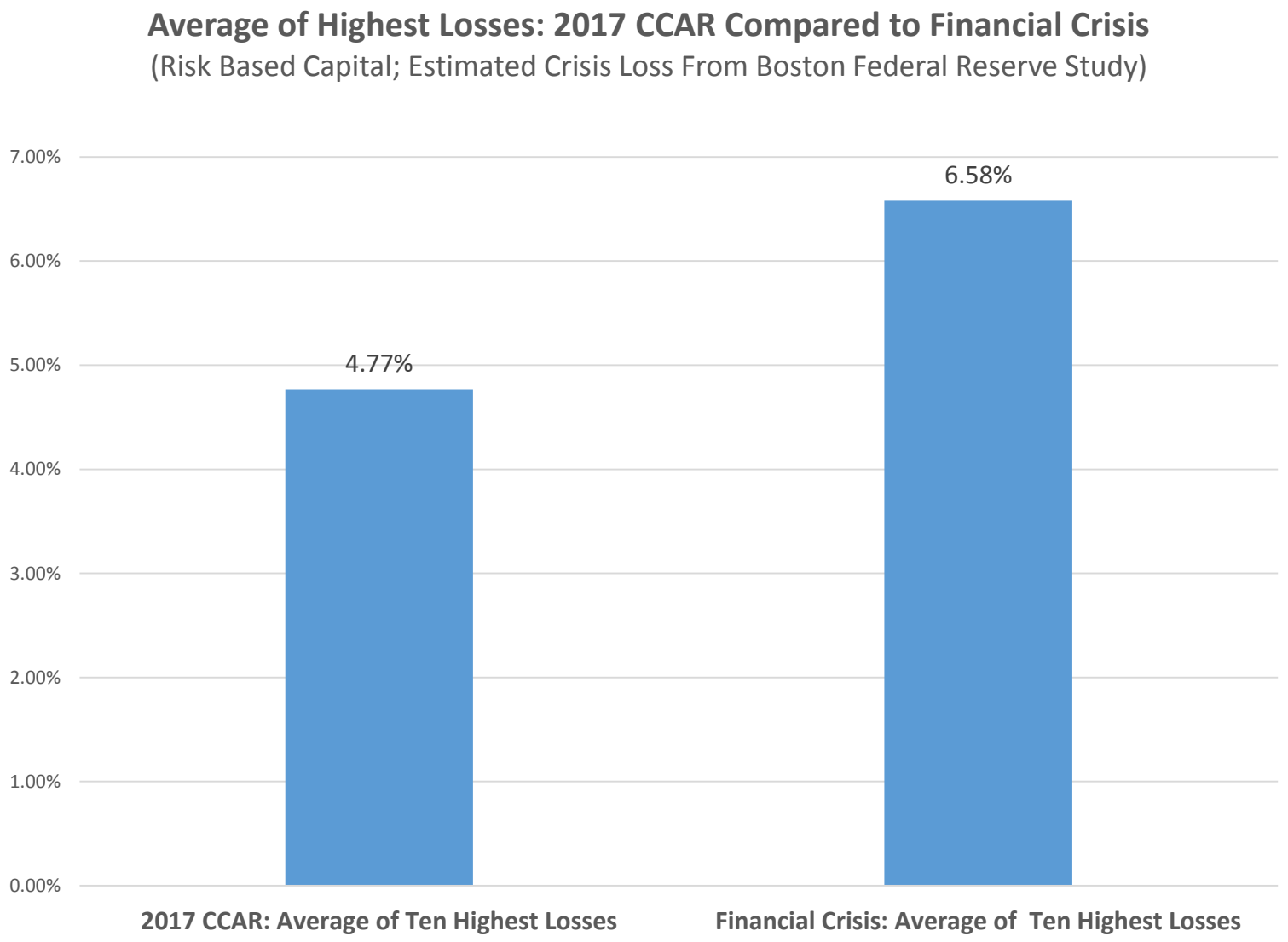
2017 CCAR Model Losses Lower Than Financial Crisis Losses

- The average 2017 CCAR modeled loss of 3.3% was far below the 6.58% average loss at the top ten largest banks in the 2008 financial crisis, as estimated by the Boston Fed.
- Comparing the average of the top ten largest losses in the CCAR to the top ten estimated losses in the 2008 financial crisis also gives a far lower figure.
- The Boston Federal Reserve estimates of are likely a ***significant underestimate*** as they do not take into account all government assistance.

SOURCES: 2017 Federal Reserve CCAR Release; Strah, Scott, Jennifer Hynes and Sanders Shaffer, "The Impact of the Recent Crisis On The Capital Positions of Large Financial Institutions", Working Paper, Federal Reserve Bank of Boston, July 16, 2013. See chart on page 17



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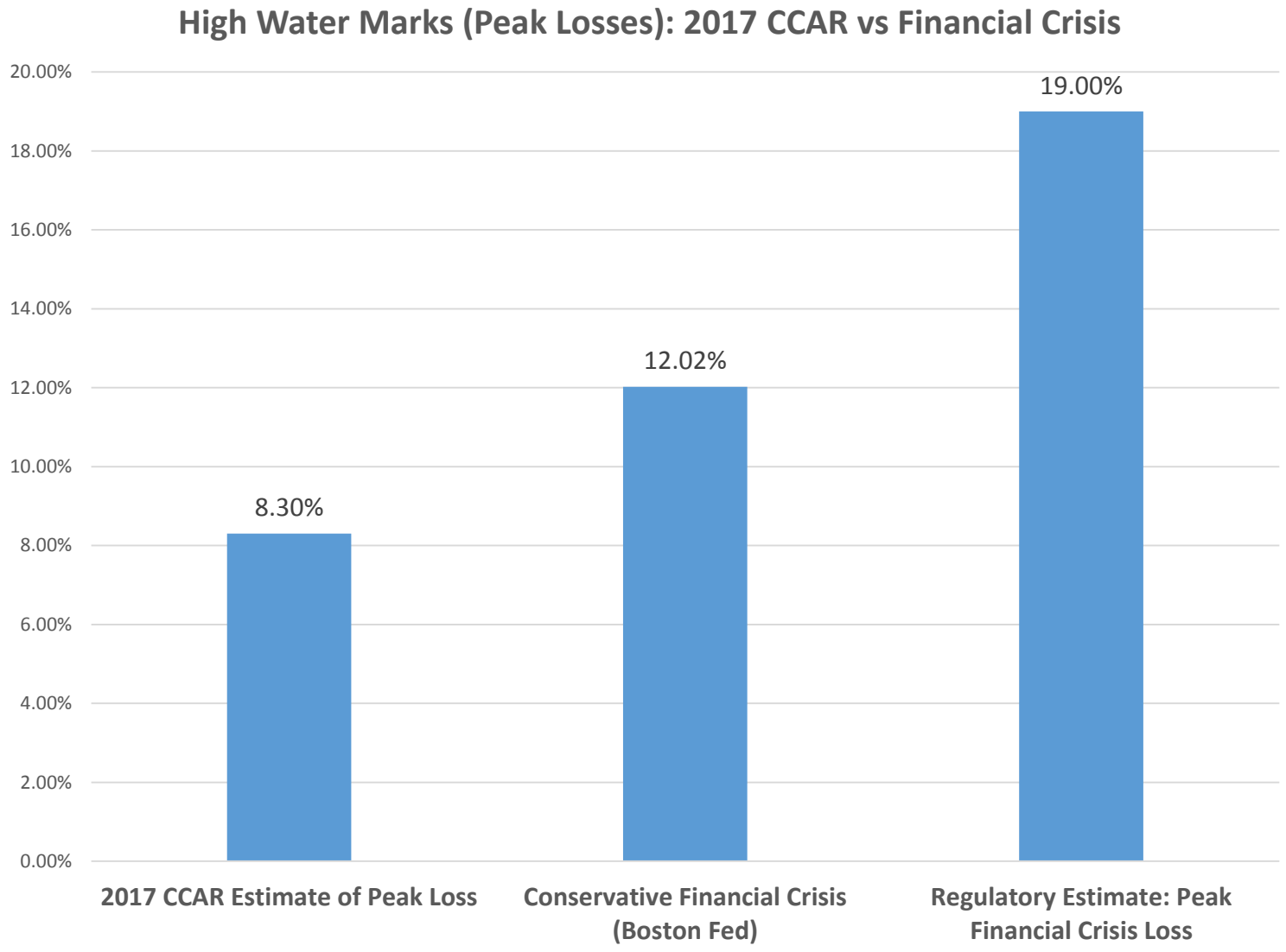
2017 CCAR Model Losses Lower Than Financial Crisis Losses

- 2017 CCAR estimate of the highest financial crisis loss (peak loss at any major bank) is much lower than financial crisis peak loss.
- Regulators' best estimate of 2008 financial crisis peak losses, including effects of government assistance, is 19 percent. (Calibration exercise performed for the TLAC rule)

SOURCES AND NOTES: 2017 Federal Reserve CCAR Release; Strah, Scott, Jennifer Hynes and Sanders Shaffer, "The Impact of the Recent Crisis On The Capital Positions of Large Financial Institutions", Working Paper, Federal Reserve Bank of Boston, July 16, 2013. CFR 8274 in Federal Reserve Board of Governors, "Total Loss-Absorbing Capacity, Long-Term Debt, and Clean Holding Company Requirements", Final Rule, Federal Reserve System 12 CFR 252, Federal Register Volume 82, Number 14, January 24, 2017. Peak losses estimated as highest loss in risk-based capital at any major bank.



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