Effects of Stress Tests

Andreas Lehnert

Nellie Liang

Til Schuermann

Jaret Seiberg

Benson Roberts

Understanding the Effects of the U.S. Stress Tests

Donald Kohn and Nellie Liang

Brookings Institution

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Stress Testing: A Discussion and Review

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Approach

- Challenge for the paper is to separate the effects of stress tests from effects of regulatory changes
- Frame our questions to focus on features of the stress tests that distinguish them from higher regulatory capital requirements
  - More forward-looking and based on tail risks
  - May affect banks’ risk management practices in different ways
- Analysis of public data, discussions with experts, and review of empirical research

Questions

- Have the stress tests helped to counter potential procyclicality of bank capital?

- Have the stress tests improved risk management and capital planning at tested institutions?

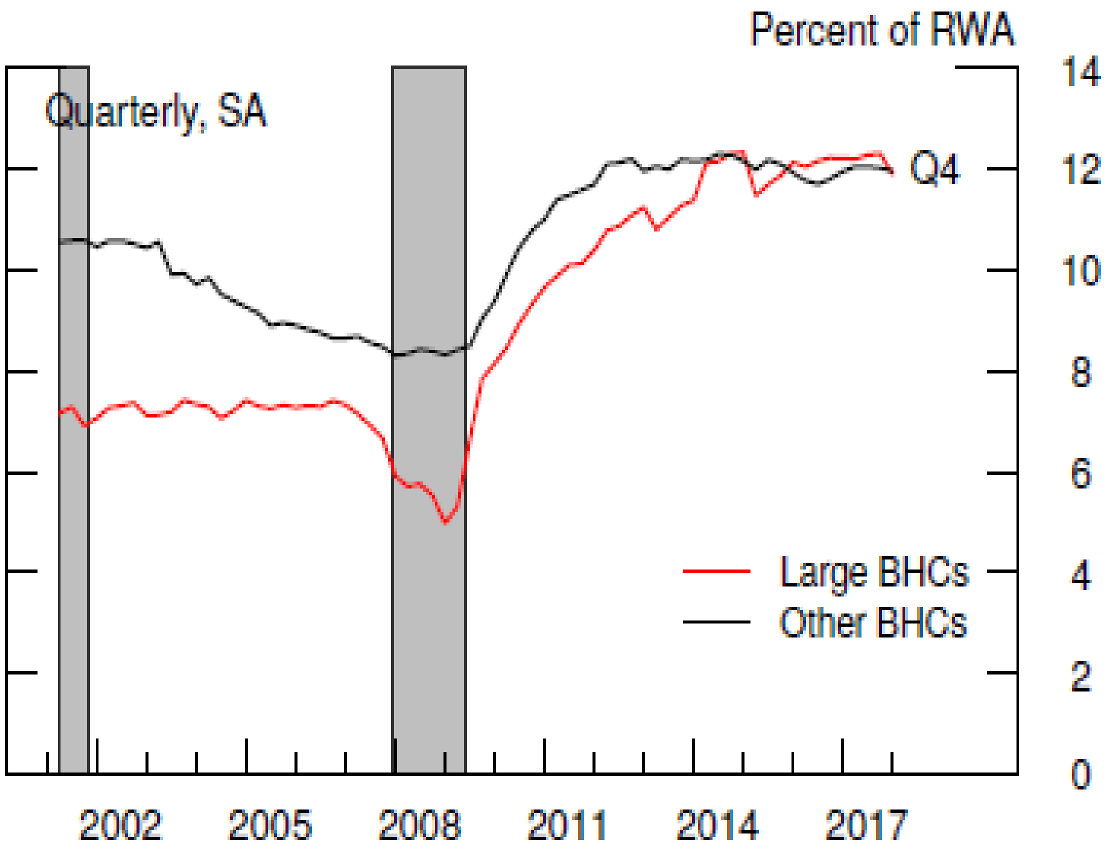
- Have the stress tests affected the cost and availability of credit from the largest banks?

➢ Caveat – Have not had an economic downturn

Stress test capital requirements

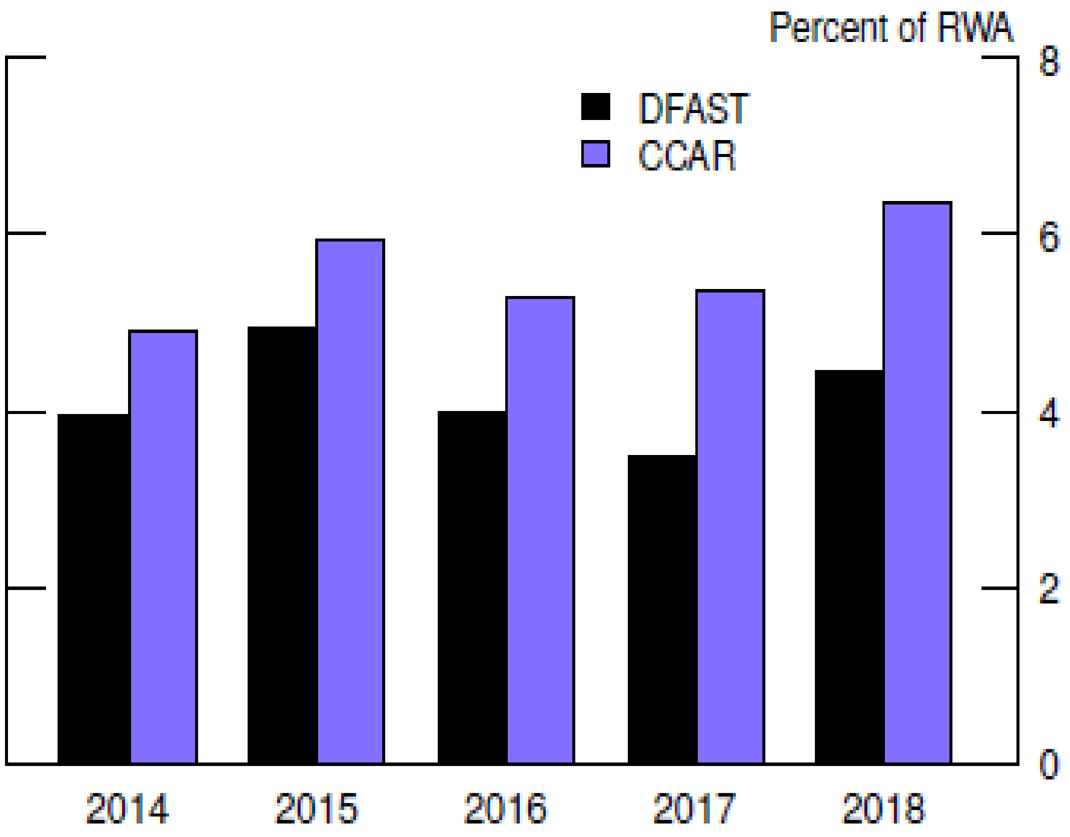
- Stress test program designed to make capital requirements less static and to help counter procyclicality
- Two features:
  - Macro scenarios can be more stressful when times are good and can include new risks
  - Require banks to pre-fund shareholder payouts
    - CCAR - Proposed dividends and share repurchases
    - DFAST – Assume dividends at past rate

Common Equity Tier 1 Ratio, by BHC type

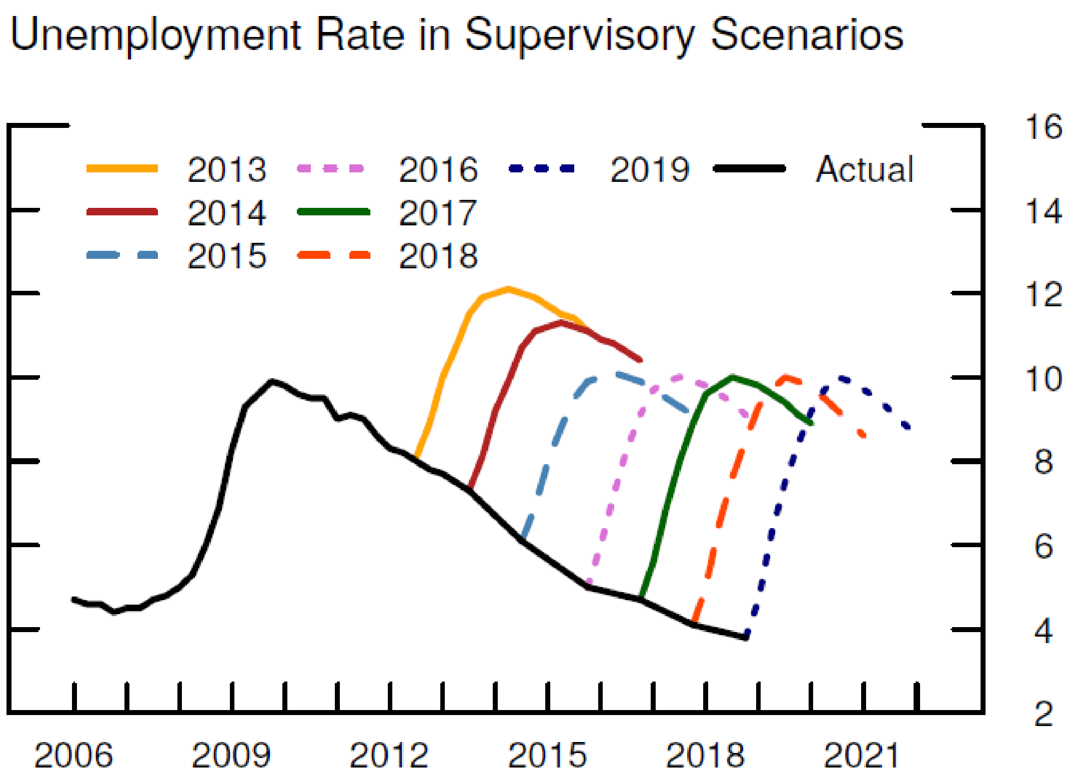


Source: FR Y-9C

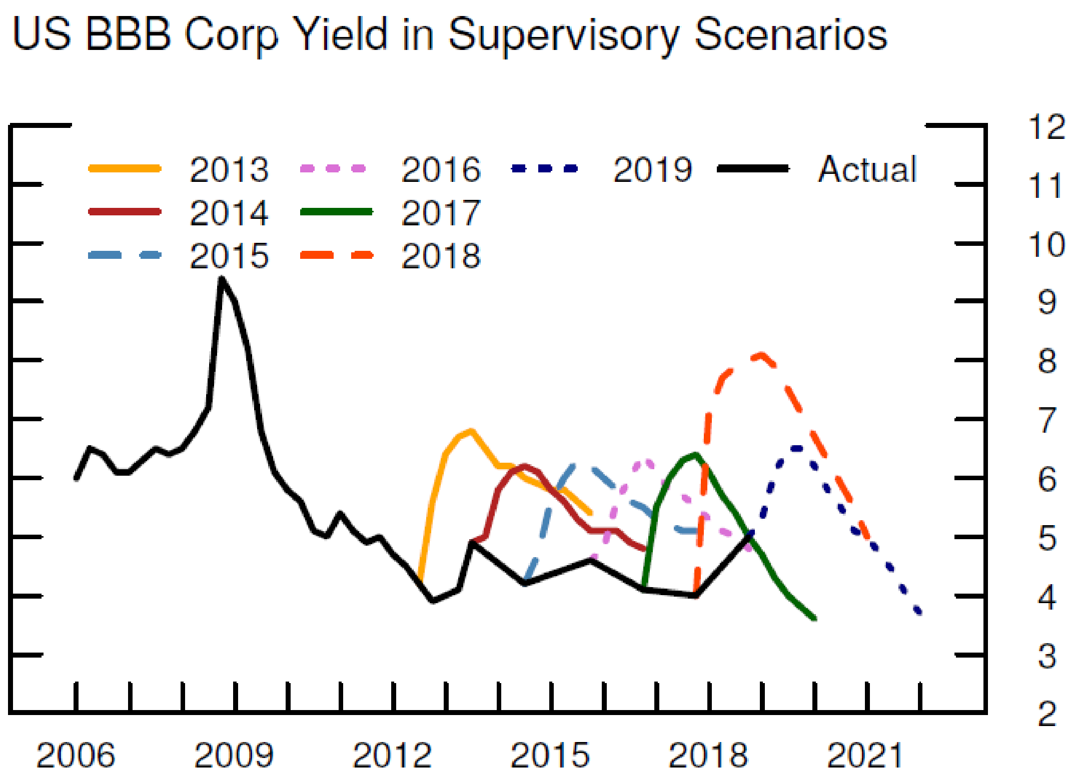
Stress Test Capital Buffer (Decline in Common Equity Ratio)



Capital buffer is starting capital minus minimum capital for domestic BHCs.
Source: Public DFAST and CCAR disclosures



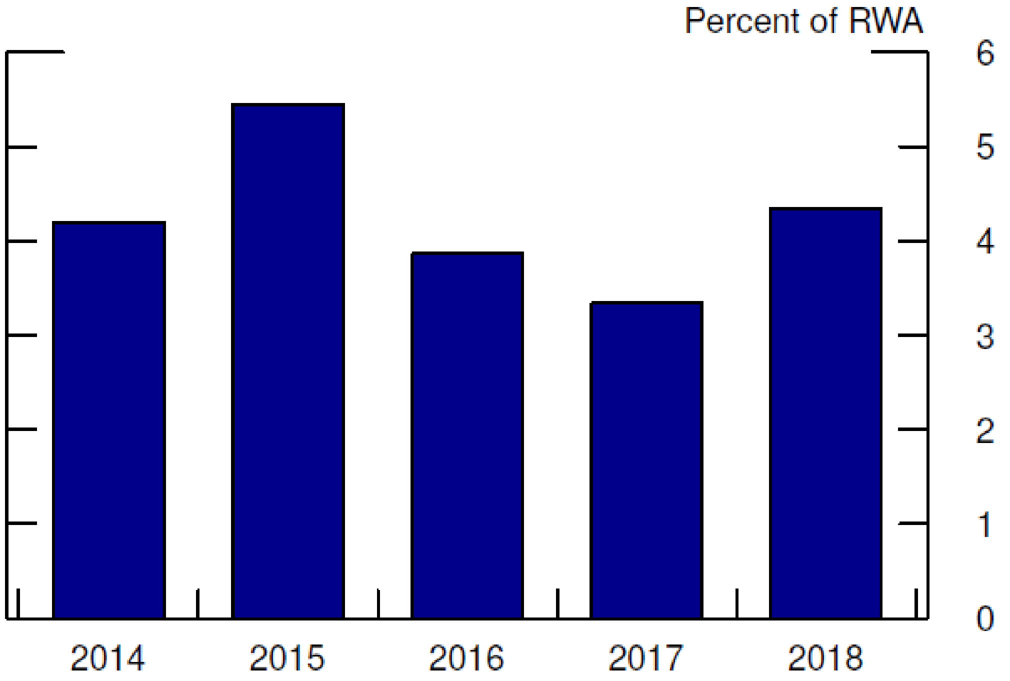
Source: Public DFAST stress test disclosures.



Source: Public DFAST stress test disclosures.

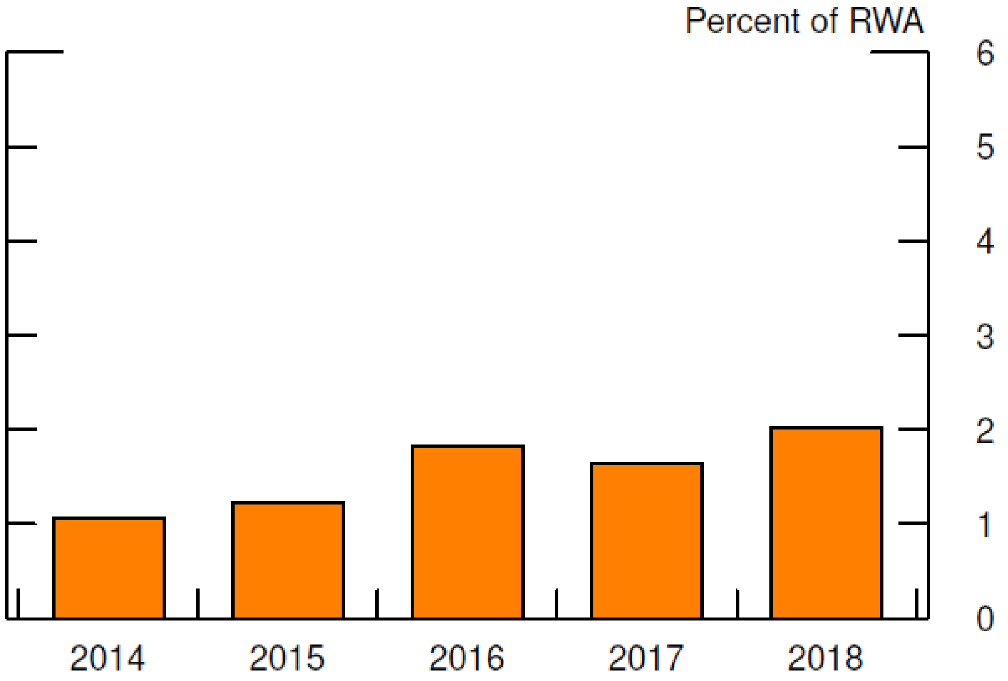
Estimated net losses = Capital buffer - estimated dividends (to min quarter)

Stress Test Capital Buffer Excluding Dividends, GSIBs



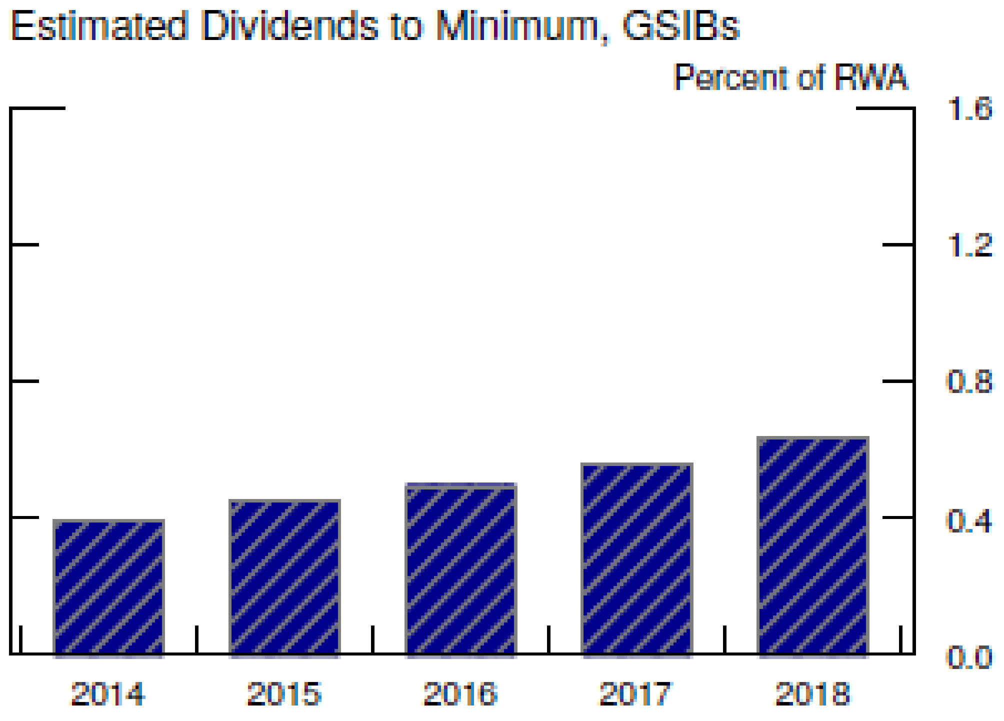
Note: DFAST capital buffer is starting capital minus minimum capital, less estimated dividends for 8 BHCs subject to the market shock and counterparty default.
Source: Public DFAST stress test disclosures.

Stress Test Capital Buffer Excluding Dividends, Non-GSIBs

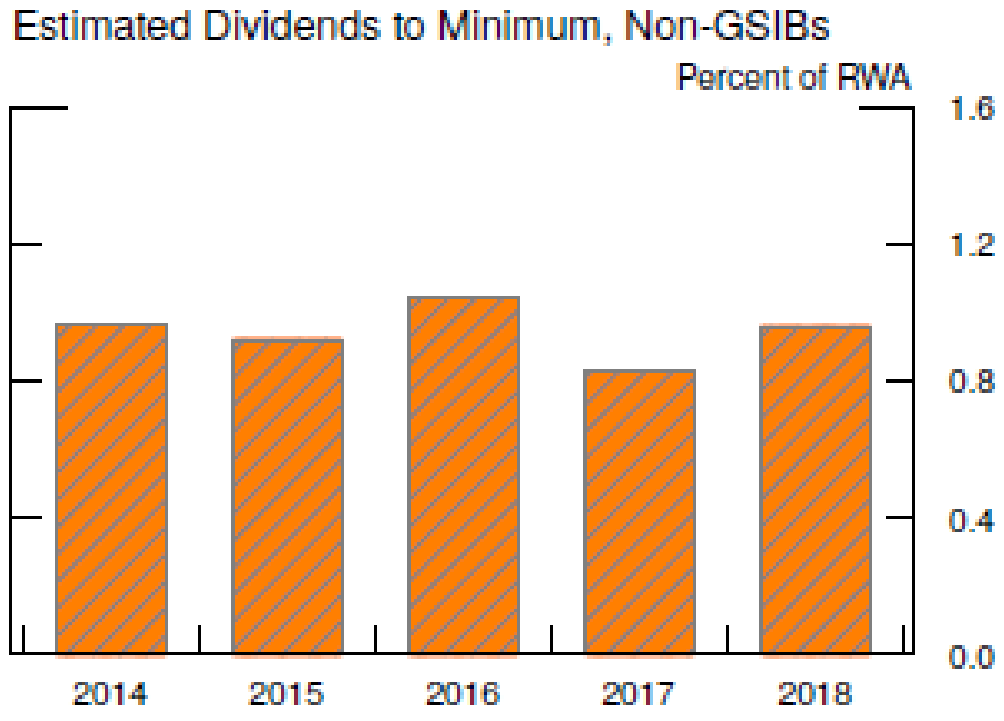


Note: DFAST capital buffer is starting capital minus minimum capital, less estimated dividends for other domestic BHCs.
Source: Public DFAST stress test disclosures.

Estimated dividends to minimum quarter

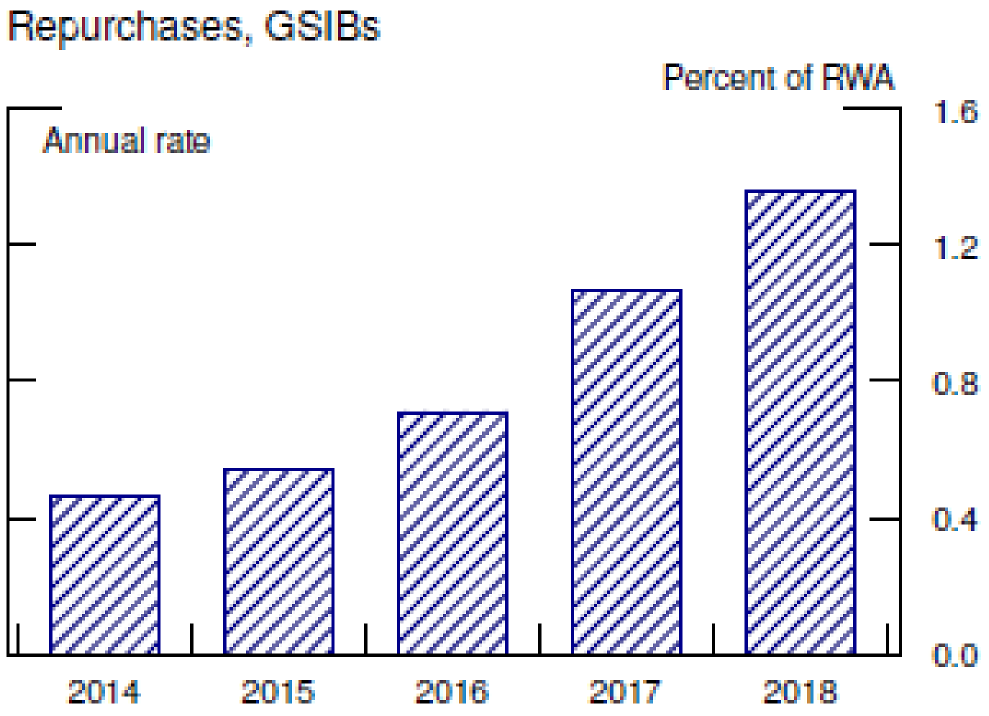


Estimated from DFAST capital buffer assuming minimum capital ratio is reached at 5 quarters.
Source. FR Y-9C and public DFAST disclosures

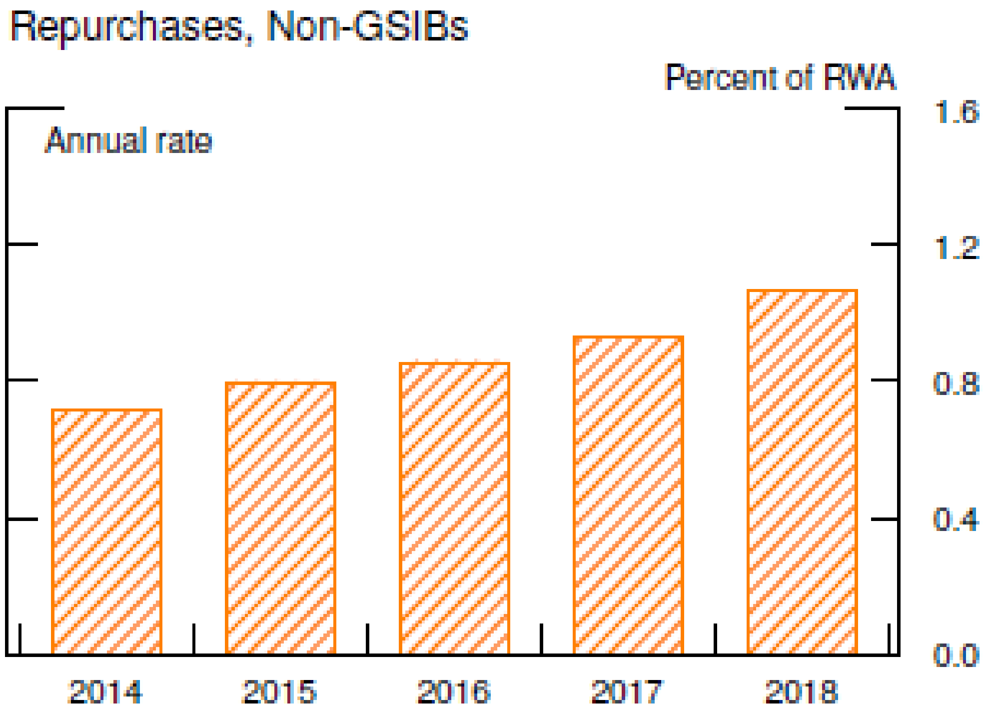


Estimated from DFAST capital buffer assuming minimum capital ratio is reached at 8 quarters.
Source. FR Y-9C and public DFAST disclosures

Share repurchases rising sharply

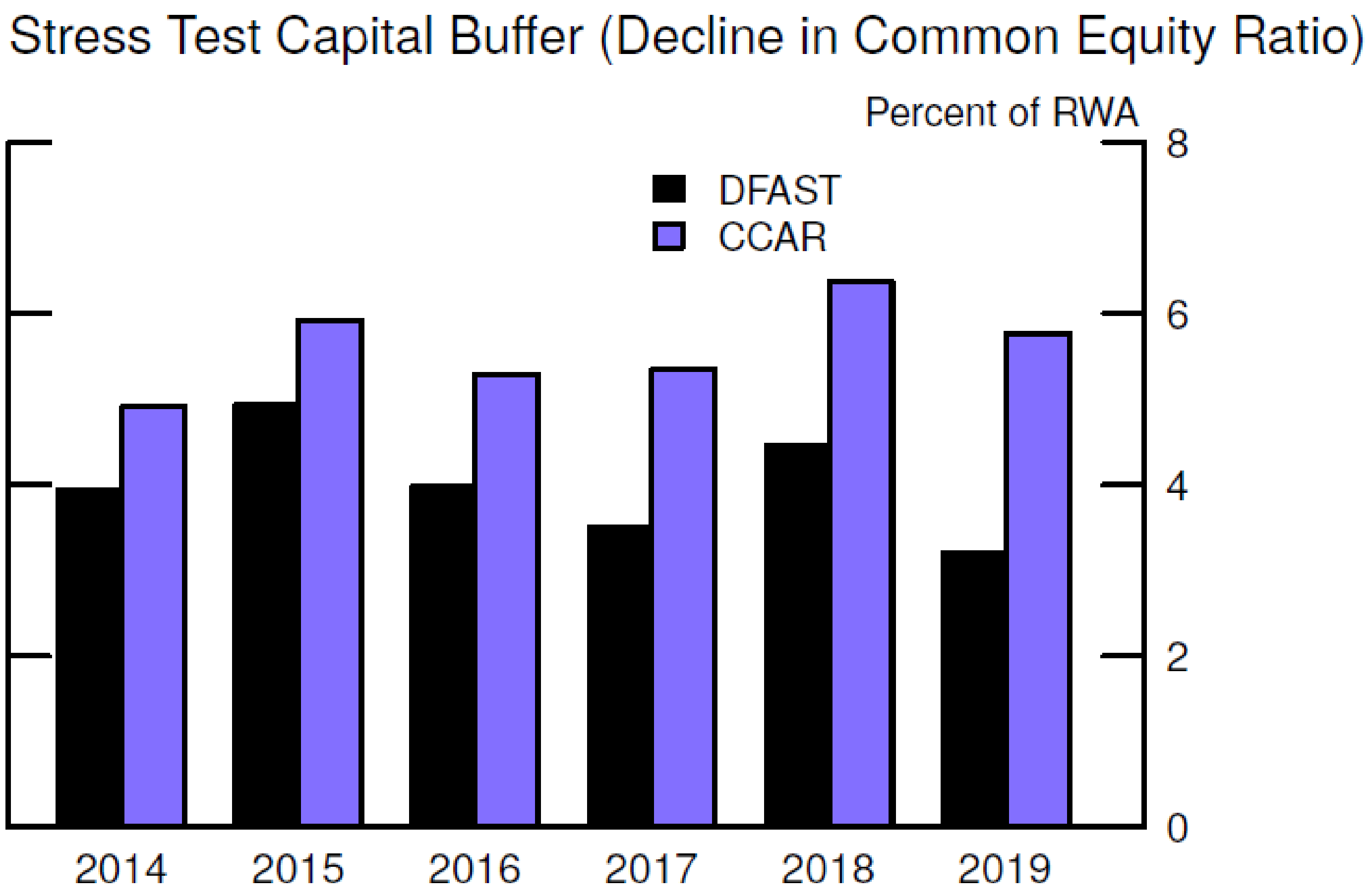


Annual, not adjusted to number of quarters to minimum. Source: FR Y-9C and 10-k reports.



Annual, not adjusted to number of quarters to minimum. Source FR Y-9C and 10-k reports.

DFAST and CCAR capital buffers declined in 2019



Two periods: Stress tests through a recession

- How much would capital decline in the first year?

  (Net Losses + DVs + RPs) for year with no RPs after mid-year

  - Non-GSIB = 11.9 (start)

    – (1.0 + 0.5 + 0.6) = 9.8 percent
  - GSIB = 12.3 (start)

    – (2.2 + 0.6 + 0.7) = 8.8 percent

Two periods: What happens in the next CCAR?

- New scenario, assume no RPs and no DV increase
- What is the max stress test capital buffer (excluding dividends) to remain above minimum requirement 4.5%?
  - Non-GSIB 4.3 percent [range 1 to 2 percent]
  - GSIB 3.6 percent [range 3.3 to 5.5 percent]
  - Can vary assumptions in this simple example

➢Average Non-GSIB is almost certain to be above the minimum, but the average GSIB is closer to the constraint

Two periods highlight sources of risks to lending

- Two aspects contribute to risk
- Severity of scenarios – could reduce though limited by investors' views of risks once a recession is underway
- Starting capital ratios -- could require higher starting capital for banks with larger expected *Net losses* and higher dividends
  - Prefunding share repurchases has been a significant loss absorber
  - Could raise minimum by the GSIB charge
  - Could raise the countercyclical capital buffer
    - Differs from the GSIB charge because release would make it less likely to trigger constraints on distributions

Have the stress tests helped to counter potential procyclicality of bank capital?

- *Yes, though more from the requirement to pre-fund shareholder payouts than the macroeconomic scenarios*

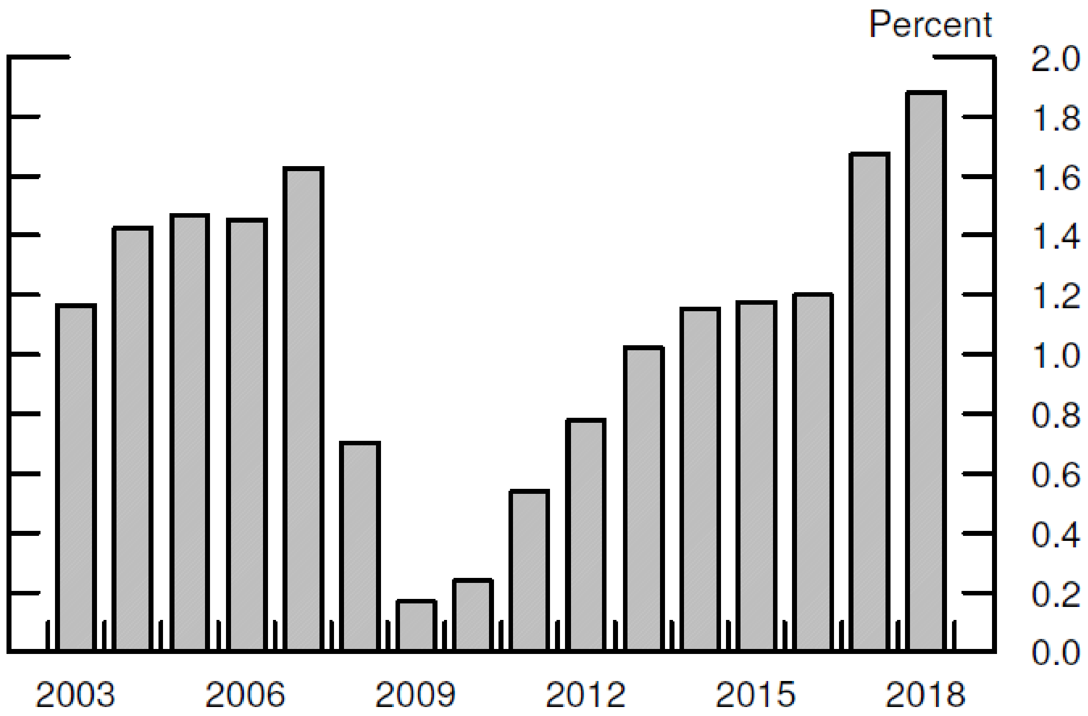
  - Estimated net losses did not decline for GSIBs and increased for non-GSIBs from 2014-18
  - But estimated net losses declined for both groups in 2019
  - Shareholder payouts through 2018 increased sharply

Have the stress tests improved risk management and capital planning at tested institutions?

- *Yes, absolutely, driven importantly by the public qualitative assessment*
- Based on interviews
- Very broad agreement of improvements
  - Better data
  - Better risk identification and measurement
  - Stronger governance and link between risk and capital planning
- Less agreement on whether public assessment is still needed, and expect some backsliding
- Need an objective measure of risk management
  - Disclosure would provide discipline to both banks and supervisors

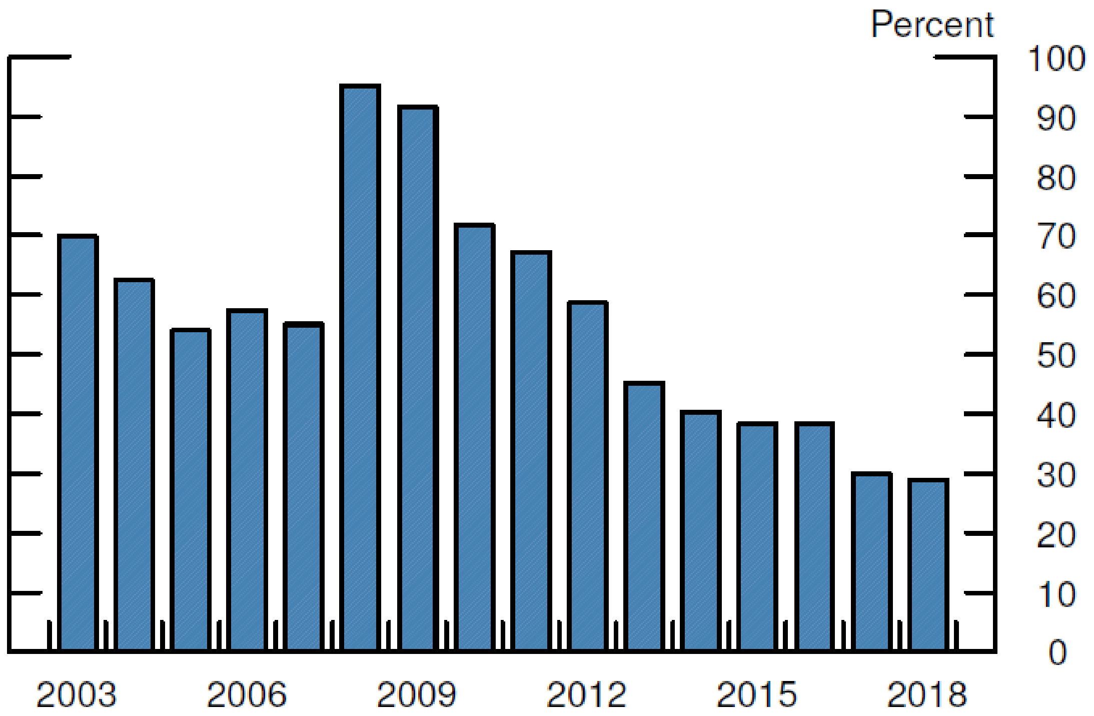
Capital plans more conservative: Dividend payout lower

Mean Total Payouts/RWA, 2003-2018



Source: FR Y-9C.

Mean Dividends/Total payouts, 2003-2018

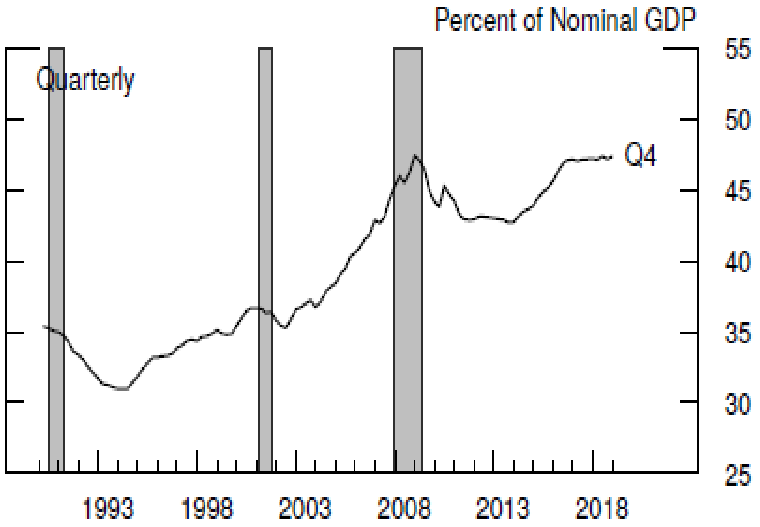


Source: FR Y-9C.

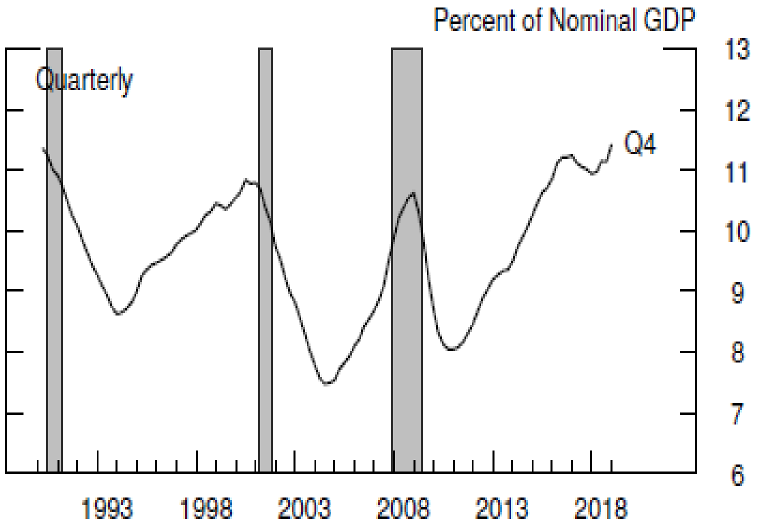
Have the stress tests affected the cost and availability of credit from the largest banks?

- Difficult to isolate effects of stress tests
- Credit from the stress-tested banks is reduced but total credit may not be
  - Higher loan spreads, reduced credit, and less risky loans from banks with larger stress test capital buffers
  - Studies that use loan-level data and can control for demand at the borrower or local market level
  - Large business borrowers have alternatives
  - Small businesses have fewer alternatives, but market-level data suggest that credit growth is not related to stress test exposures as smaller banks and nonbanks have increased their share

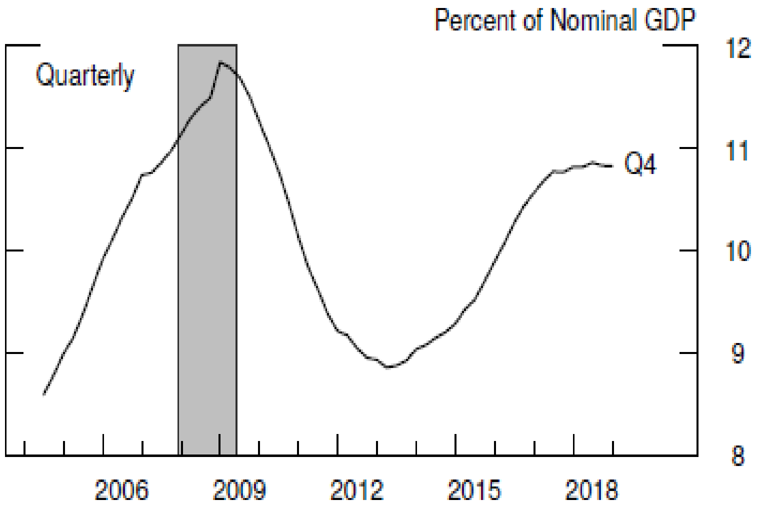
Loans and Leases in Bank Credit



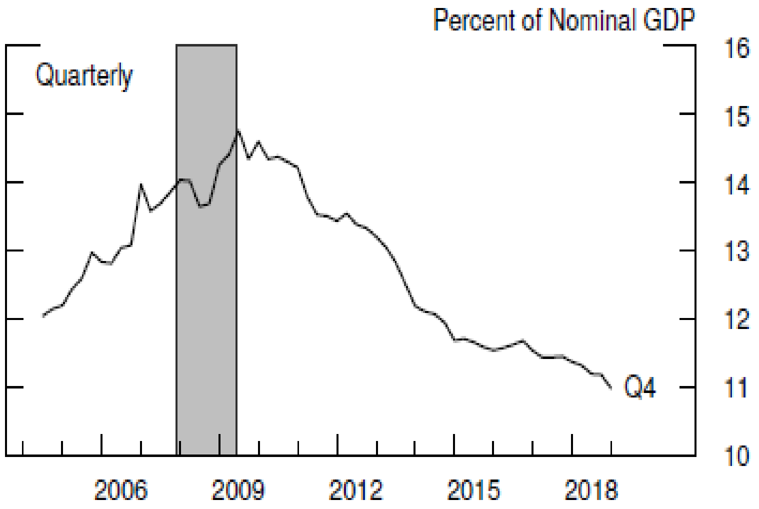
Commercial and Industrial Loans



Commercial Real Estate Loans



Residential Real Estate Loans



Source. H.8 Release – Assets and Liabilities of Commercial Banks in the US, Federal Reserve Board.

Bank credit from the tested banks is reduced … *but may be a feature not a bug*

- Credit growth was rapid before the crisis
- Higher default rates for non-local-market loans
- Reforms intended to reduce some credit growth in exchange for lower probability of failure of the largest banks with the greatest externalities
- None have done a welfare analysis of reduced credit provision by stress-tested banks
- Studies have looked at transition effects and long-run effects may be lower

Questions and our answers

1. Have the stress tests helped to counter potential procyclicality of bank capital to support lending?
   - *Yes, which should help support lending in the next recession, though more from the requirement to pre-fund shareholder payouts than the macroeconomic scenarios*
2. Have the stress tests improved risk management and capital planning at tested institutions?
   - *Yes, absolutely, driven importantly by the public qualitative assessment*
3. Have the stress tests affected the cost and availability of credit from the largest banks?
   - *Yes, but this may be a feature rather than a bug*

✓ Caveat – Have not had an economic downturn

More questions for stress test effects

- Have banks' business models become more similar as a result of stress tests? Are they ignoring risks not specified in the stress tests?
- Are there costs from the variation in capital requirements from stress tests, above the variation that reflects actual uncertainty about economic and financial conditions?
- Will stress-tested banks be able to support the economy through lending in the next severe downturn? What would be the effects of actual and proposed changes in the stress test program?

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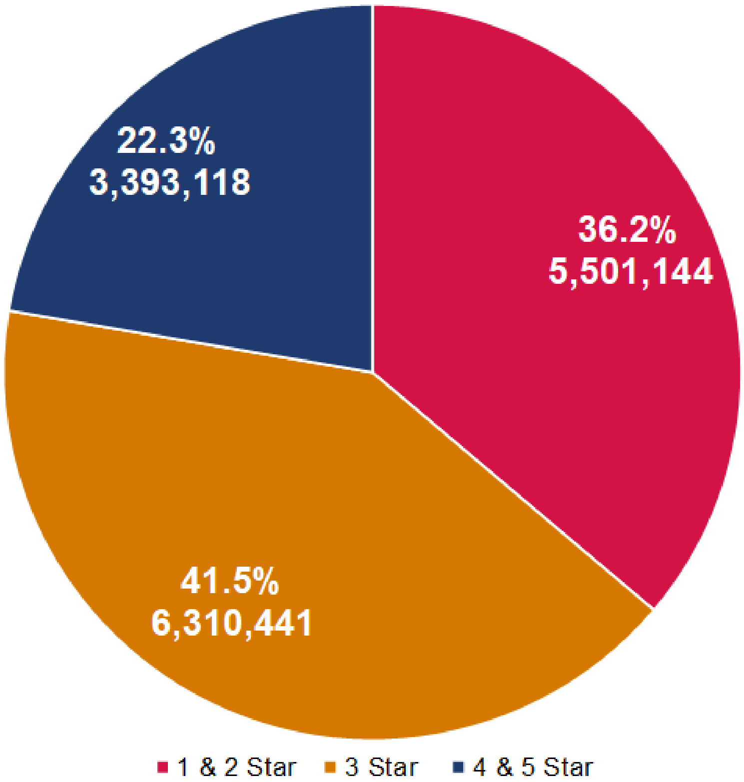
CCAR 2019: Severely Adverse Scenario
Other Fair Value Assets (GICS-Based Data Input)

Sector	GICS Code	Industry Group	Relative Fair Value Shock (%) United States Equity	United States Debt	Non-US Equity	Non-US Debt
Real Estate	4040	Core/Existing: Office	-45.6%	-18.3%	-49.9%	-19.9%
Real Estate	4040	Core/Existing: Retail	-45.6%	-18.3%	-49.9%	-19.9%
Real Estate	4040	Core/Existing: Multi-Family	-45.6%	-18.3%	-49.9%	-19.9%
Real Estate	4040	Core/Existing: Hotel	-45.6%	-18.3%	-49.9%	-19.9%
Real Estate	4040	Core/Existing: Other	-45.6%	-18.3%	-49.9%	-19.9%
Real Estate	4040	Opportunistic / Development	-45.6%	-18.3%	-49.9%	-19.9%
Real Estate	4040	Unspecified	-45.6%	-18.3%	-49.9%	-19.9%
Information Technology	4510	Software & Services	-43.1%	-19.4%	-46.7%	-23.4%
Information Technology	4520	Technology Hardware & Equipment	-43.5%	-19.6%	-47.0%	-23.7%
Information Technology	4530	Semicondt. & Semicondt. Equip.	-43.5%	-19.5%	-27.0%	-13.5%
Information Technology	45	Unspecified	-43.4%	-19.6%	-47.8%	-24.0%
Telecommunication	**5010**	**Telecommunication Services**	-40.3%	-18.1%	-44.2%	-22.0%
Utilities	**5510**	**Utilities**	-37.0%	-4.8%	-41.5%	-6.6%
Tax Credits	N/A	Section 42 Housing Credits	-4.9%			
Tax Credits	N/A	Section 45 Alternative Energy Investments	-13.9%			
Tax Credits	N/A	Other Tax Credits	-4.9%	-4.9%	-3.5%	-3.5%
Unspecified Sector/Industry	Unsp	Other Unspecified Sector/Industry	-43.4%	-10.4%	-47.1%	-5.5%

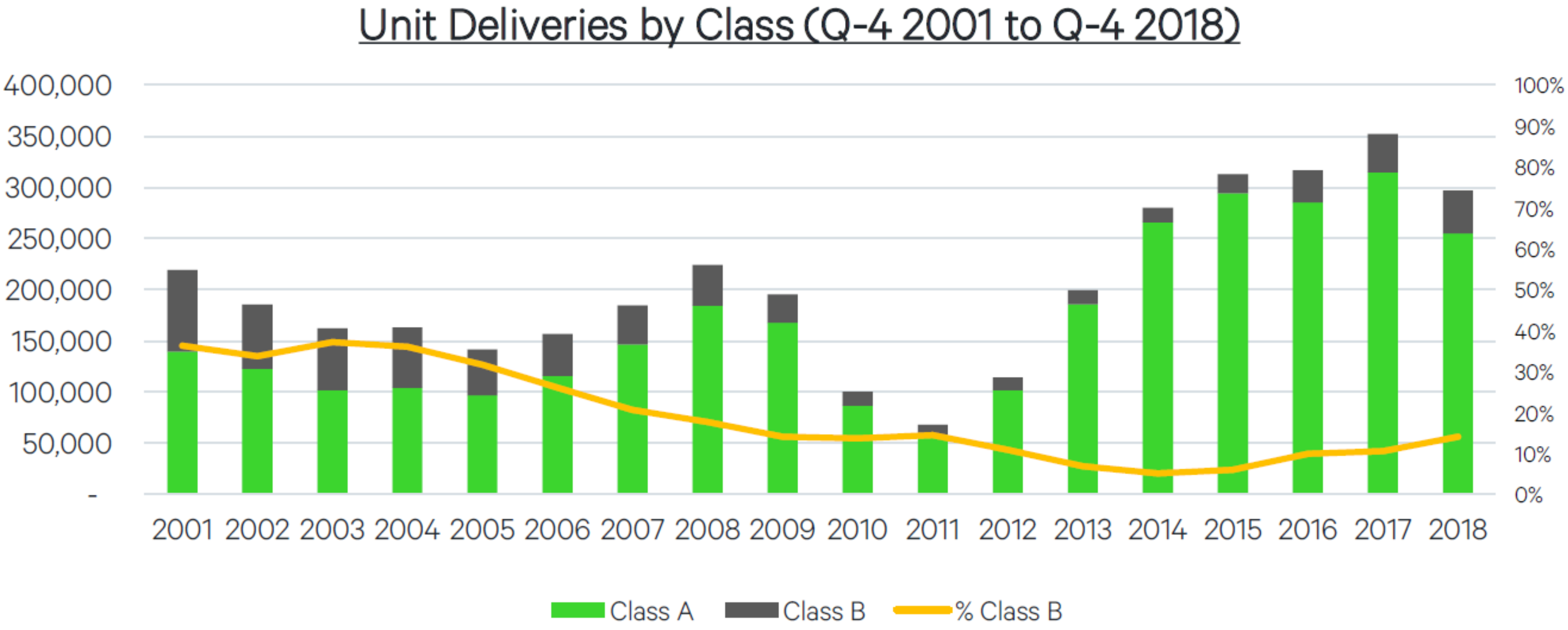
1 & 2 Star Represents A Major Portion Of The Market

Number Of Units By Star Rating



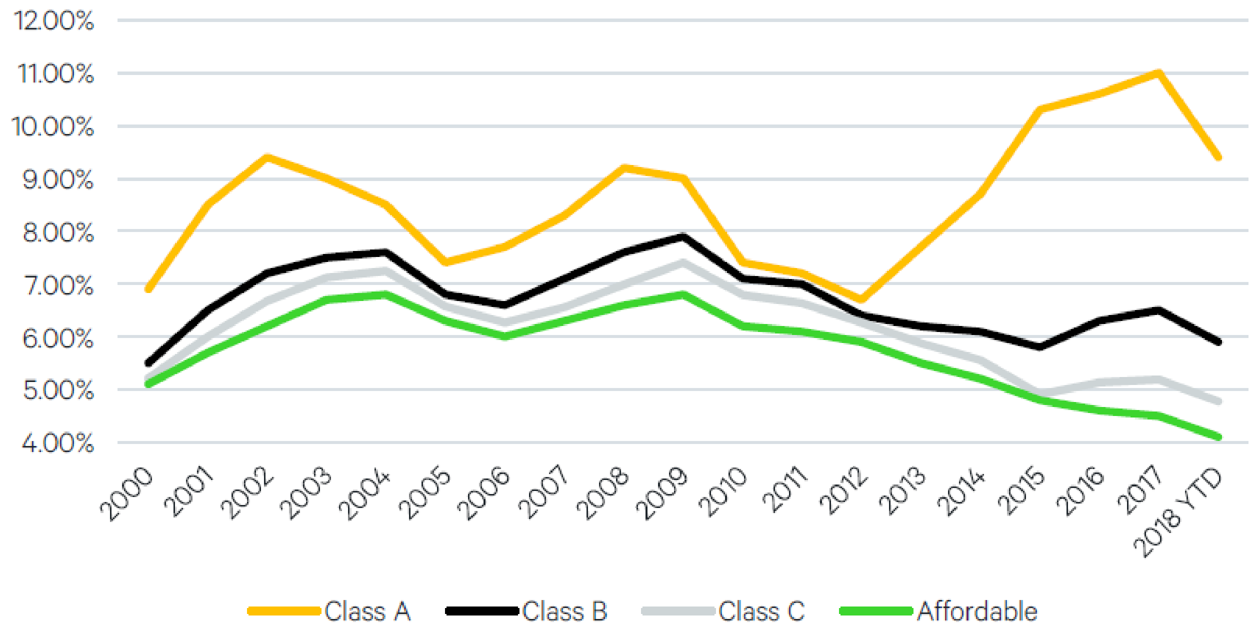
Source: CoStar Group

As of August 2016



[1] RSMeans data. Chart source: CoStar Analytics, as of Q-4 2018; Bridge Investment Group Research

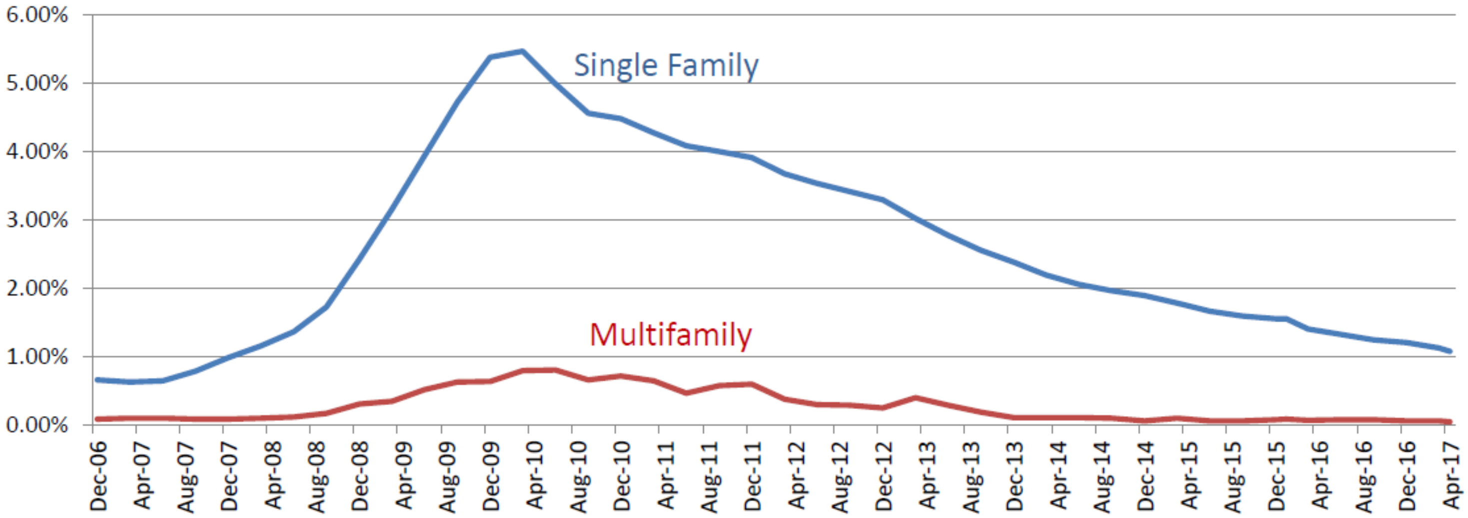
Apartment Vacancy by Class (Q1-2000 to Q3-2018)[1]



Sources: [1] CoStar Analytics. [2] CohnReznick LLP Report, 2012. [3] National Apartment Association (NAA).

Fannie Mae's multifamily portfolio has shown stability through stress periods

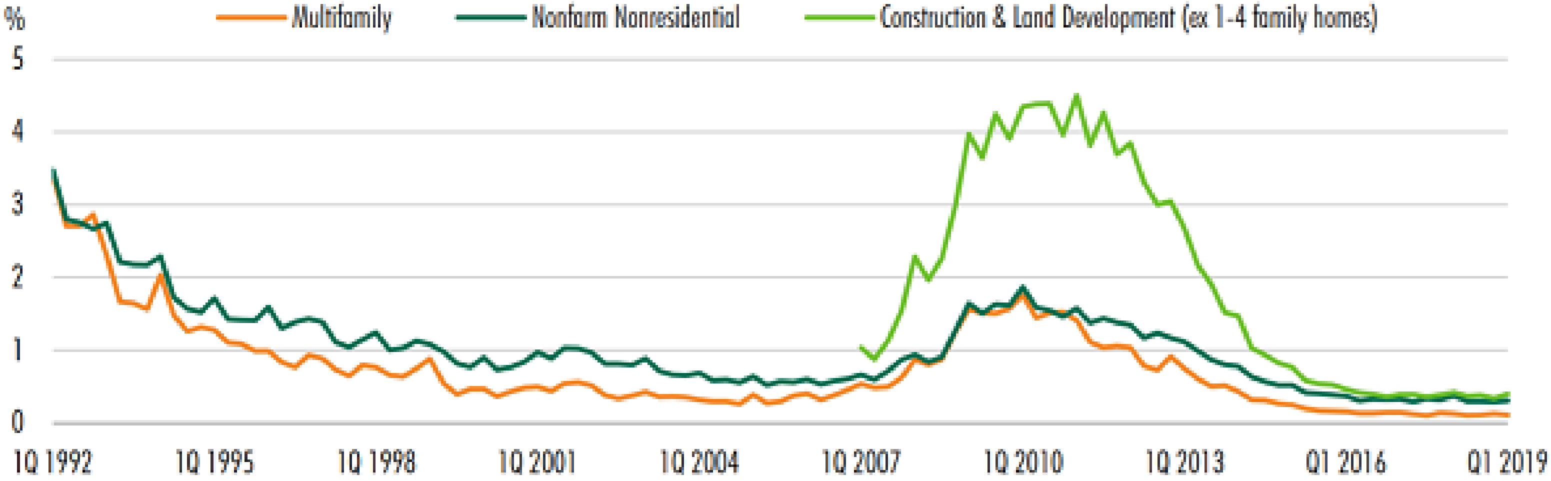
Fannie Mae Serious Delinquencies[1]



[1]Single Family = 90 days past due; Multifamily = 60 days past due

http://www.fanniemae.com/portal/about-fm/investor-relations/monthly-summary.html

Figure 3: Historical Bank Delinquency Rates



Source: CBRE Research, FDIC, Q1 2019. 30+ days delinquent. *Multifamily and nonfarm nonresidential are for existing assets only.* Construction & land development mortgages include all commercial and multifamily developments; 1-4 family homes are removed from this data set.

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