



CEIS REVIEW INC.

Loan Portfolio Stress Testing

How to Use Stress Test Results and Qualitative Considerations

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BankHorizons Conference

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Consulting Services To The Financial Community



CEIS REVIEW INC.

About CEIS Review Inc

- Independent consulting firm serving lending institutions regarding loan portfolios since 1989
- Experience providing the following services:
 - Loan Review Programs
 - Due Diligence
 - Loan Loss Reserve Methodology Validation or Refinement
 - Loan Portfolio Stress Testing
 - Consulting
 - Process Reviews
 - Credit Policy Review and Development



Agenda

- I. Brief Overview of Stress Testing and Regulatory Requirements
- II. How to Use Stress Test Results
- III. Qualitative Considers – Areas of Regulatory Focus
- II. Q & A (also throughout)



Types of Stress Testing

➤ “Bottom-up” Analysis

- Apply set of assumptions to a sample of individual transactions
- Determine impact on key ratios (DSC, LTV, etc) for each transaction
- Aggregate results at the portfolio level
- Extrapolate results across portfolio (depending on sample size)

➤ “Top-down” Analysis

- Segment the portfolio into homogeneous pools
- Evaluate impact of a scenario(s) on each pool
- Aggregate results for each pool at total portfolio

➤ Individual Transactional Analysis

- Typically performed at underwriting / approval
- Sensitize cash flow or other indicators
- Assess impact on risk of migration to criticized / classified / default
- Not focus of today’s discussion



Regulatory Expectations for Stress Testing

2006 Interagency Guidance on CRE Concentrations

2009 CCAR Requirements for 19 Largest Banks

2011 Dodd-Frank – Requirements for Banks > \$10 Billion in asset

2011 - OCC Comptroller's Handbook – "Concentrations of Credit" – Update

2012 Interagency Expectations for Stress Testing by Community Banks

2012 FDIC –Supervisory Insights – "Stress Testing Credit Risk at Community Banks"

2012 OCC – "New Stress Testing Guidance and CRE Stress Test Tool"

2013 Interagency Guidance on Leveraged Lending



Regulatory Expectations for Stress Testing for Community Banks

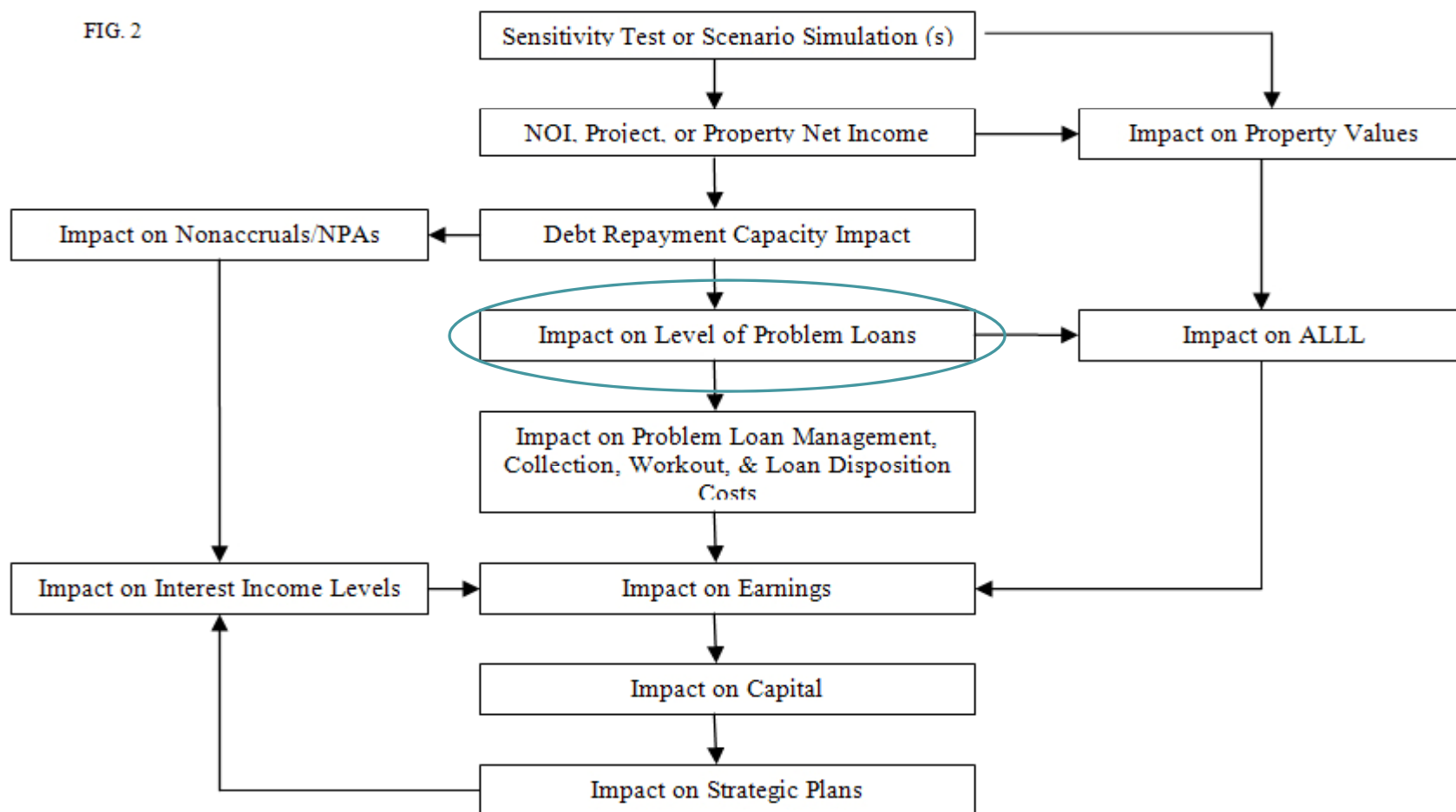
Key Take-Aways

- “Banks of all sizes will benefit by supplementing stress testing of significant individual loans [i.e., concentrations] with portfolio and firm-wide stress testing. The **overall goal is to quantify loss potential and the impact on earnings and capital adequacy.**”
- Stress test “...sophistication ...should be **consistent with the size, complexity, and risk characteristics of its [the bank’s] CRE loan portfolio.**”
- Reiterated that “**all banking organizations, regardless of size, should have the capacity to analyze the potential impact of adverse outcomes on their financial condition....**The agencies note that such **existing guidance, including that covering** interest rate risk management, **commercial real estate concentrations**, and funding and liquidity management (among others), **continues to apply.**”



Bottom-Up Stress Testing

FIG. 2



Source: Federal Reserve Bank of Philadelphia – SRC Insights 3Q08 – *Stress Testing: A Risk Management Tool for Commercial Real Estate Loan Concentrations, Part II*



“Bottom-Up” Stress Testing Estimating Impact on Problem Loans

- Estimating impact on problem loan levels by calculating stressed DSC and LTV ratios for each loan to estimate migration to criticized and classified ratings

Grade Migration Assumptions <i>Assumed Migration Depends on Recourse, LTV and DSCR</i>		
Full Recourse		
Grade	LTV < Benchmark %	LTV ≥ Benchmark %
Pass	(Appropriate DSCR Thresholds)	(Appropriate DSCR Thresholds)
Marginal Pass		
Special Mention		
Classified (<i>SS or worse</i>)		
Less Than Full Recourse		
Grade	LTV < Benchmark %	LTV ≥ Benchmark %
Pass	(Appropriate DSCR Thresholds)	(Appropriate DSCR Thresholds)
Marginal Pass		
Special Mention		
Classified (<i>SS or worse</i>)		



Bottom-Up Scenario Results Interest Rate Sensitivity

Indicator (\$000)	Base	+100bps	+200bps	+300bps	+400bps
Criticized					
Classified					
Impairment Amounts (Losses)					
Loss %					
Incremental ASC 450 Reserves					
Stressed ALLL Provision					
Tier 1 Leverage Ratio – Post-Stress					

➤ Above can be derived for different portfolio segments, products, geographic areas, lending units, etc



Scenario Results

Impaired, or Criticized /Classified in All Four Scenarios

Borrower	12/31/13 Exposure (\$000)	Property Sector	Estimated Grades				Potential Impairments (\$000)			
			Scenario I (+400)	Scenario II (+150, -15%)	Scenario III (-40%)	Scenario IV (-20%, -20%)	Scenario I (+400)	Scenario II (+150, -15%)	Scenario III (-40%)	Scenario IV (-20%, -20%) (\$000)
Borrower 1	1,401	Industrial	Classified	Classified	Classified	Classified				
Borrower 2	1,076	Retail	Classified	Classified	Classified	Classified				177
Borrower 3	1,037	MF	Classified	Classified	Classified	Classified				107
Borrower 4	1,002	Industrial	Classified	Classified	Classified	Classified				119
Borrower 5	918	MF	Classified	Marginal Pass	Classified	Classified				78
Borrower 6	793	MF	Classified	Classified	Classified	Classified				64
Borrower 7	743	Office	Marginal Pass	Pass	Classified	Pass			55	
Borrower 8	663	Retail	SM	Marginal Pass	Classified	Marginal Pass			30	
Borrower 9	546	Retail	Classified	Classified	Classified	Classified			18	124
Borrower 10	438	Industrial	Classified	Classified	Classified	Classified	30	92	88	158



“Top-Down” Loan Portfolio Stress Testing Approaches

- Complexity varies based on objectives, regulatory requirements, size and nature of loan portfolio
 - “For most community banks, a simple stressed loss-rate analysis based on call report categories may provide an acceptable foundation to determine if additional analysis is necessary.” – *OCC Supervisory Guidance – Community Bank Stress Testing – 10/18/12.*
- Segment the portfolio into pools with similar loss characteristics
- Develop “stressed” loss rates for each segment; consider:
 - Bank’s historical loss rates over several stress periods
 - Peer / market loss rates over several stress period
 - **Results of any “bottom-up” stress testing**
- Calculate stress period loss amounts (minimum 2 year timeframe)
- Estimate earnings impact
- Apply earnings impact to Tier 1 Capital; pre- and post- stress capital ratios

FDIC Supervisory Insights Example

1. Estimate Portfolio Losses Over the Stress-Test Horizon					
		Stress Period Loss Rates, Two Yrs		Stress Period Losses, Two Yrs	
	Est. Portfolio Balances, in \$	Moderate Case Stress	Severe Case Stress	Moderate Case Stress, in \$	Severe Case Stress, in \$
Construction & Development	124	14.0%	25.0%	17	31
Commercial Real Estate	22	2.5%	5.0%	1	1
Residential Mortgage	372	2.9%	6.5%	11	24
Other Loans	125	5.0%	10.0%	6	13
Totals	643			35	69
2. Estimate Revenues and Impact of Stress on Earnings					
		Moderate Case Stress, in \$	Severe Case Stress, in \$		
Pre-provision net revenue (over two years)		31	25		
Less Provisions		35	69		
Less Tax Expense (Benefit)		-1	-13		
Net After-Tax Income		-3	-31		
3. Estimate Impact of Stress on Capital					
		Moderate Case Stress, in \$	Severe Case Stress, in \$		
Beginning Tier 1 Capital		88	88		
Net Change in Tier 1 Capital		-3	-31		
Ending Tier 1 Capital		85	57		
Estimated Average Assets		850	816		
Estimated Tier 1 Leverage Ratio		10%	7%		



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How Can We Use Stress Test Results?

Manage Concentration Risk

- Use results to establish or assess meaningful concentration limits
- Over time, re-evaluate limits if stress test results change
- Regulators are increasingly looking for this analysis to support new / increases in concentration limits

Stressed loss or provision rate

Apply to max portfolio per limit

Resulting loss or provision \$

Impact on Tier 1 Capital

Affirm or revise limit

- Stress testing (particularly “bottom-up”) is one of the best ways to “justify” a loan portfolio concentration



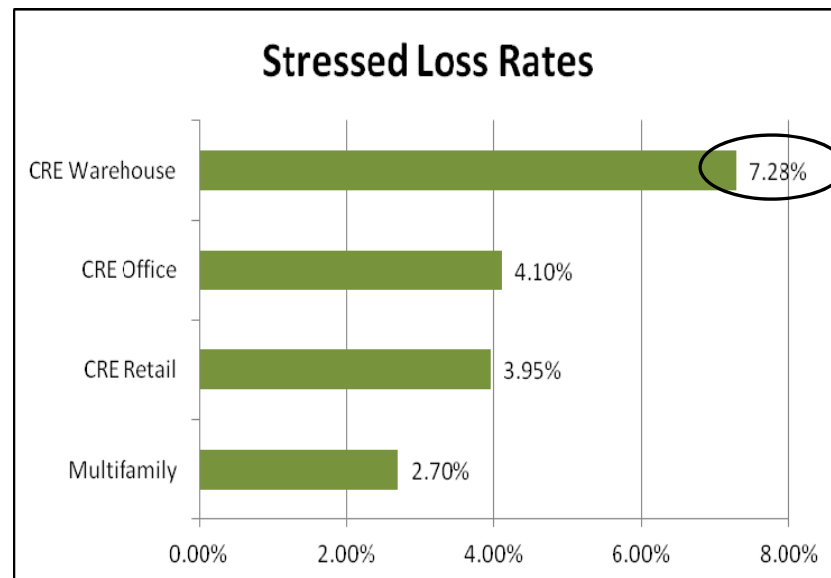
How Can We Use Stress Test Results?

Identify vulnerable segments

- Which segments frequently produce weaker stress test results?

Possible Action Plans

- Tighten underwriting standards
- More frequent monitoring
- Consider ceasing originations / exiting
- Bulk sale or loan participations to reduce exposure

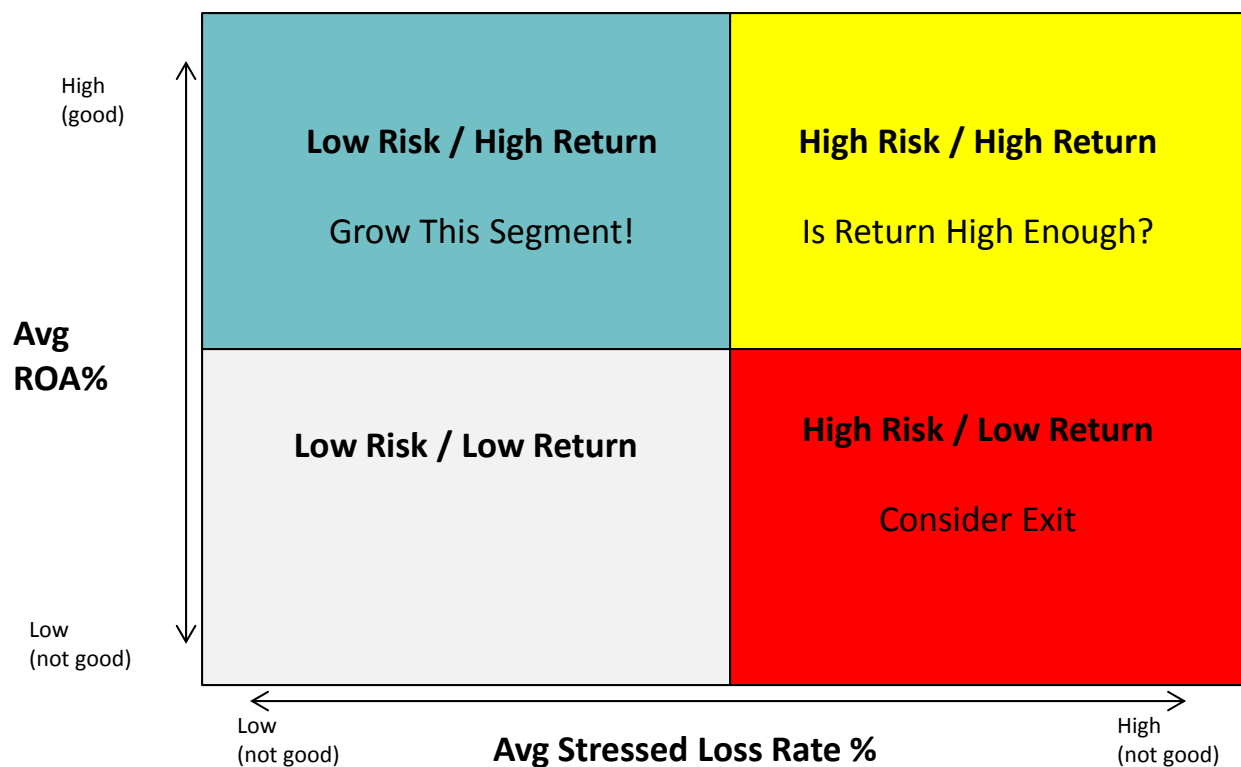




How Can We Use Stress Test Results?

Evaluate business line risk/reward

- Compare stressed loss rates to measures of profitability / return
- Do products or lines of business have appropriate risk/return trade-off?
- Strategic planning considerations

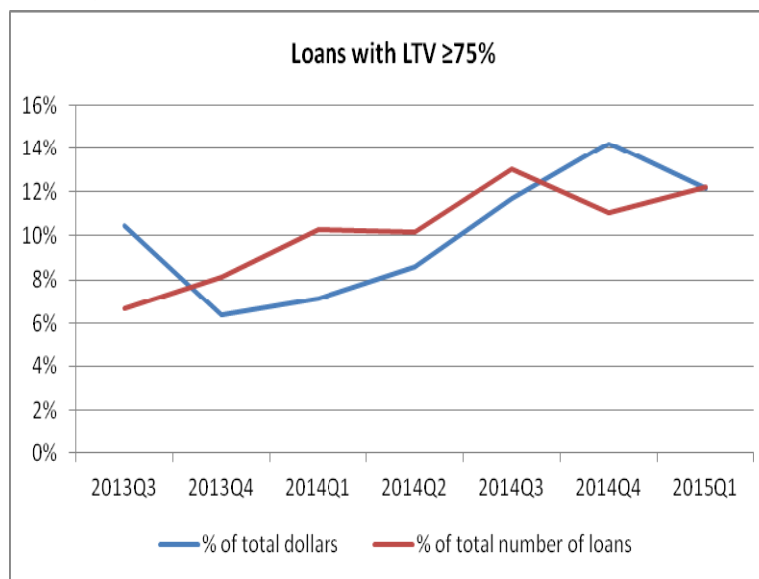




How Can We Use Stress Test Results?

Evaluate Impact / Quality of New Business

- Many geographic / produce markets are increasingly competitive
- Is the bank “giving” on structure in order to gain market share?
- What is the impact on stress test results?



Source: CEIS Publication – CRE Underwriting Trends for Banks in NY and NJ



How Can We Use Stress Test Results?

Evaluate Risk Associated with Upcoming Maturities

- Past several years have seen increased competition / pressure on structures
- Stratify stress test results by maturity profile
- Is any particular “vintage” more vulnerable than the other?
- Particularly useful analysis if (when?!) property values begin to decline again



How Can We Use Stress Test Results?

Identify vulnerable borrowers

- Press for all required financial info
- Site visits
- More frequent monitoring – add to “watch list”
- View modification requests more critically
- Seek opportunities to exit

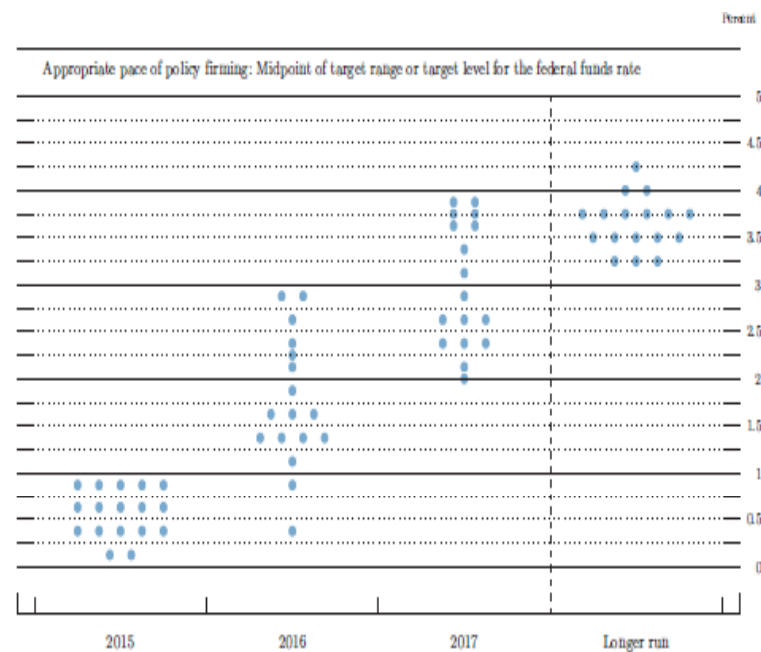
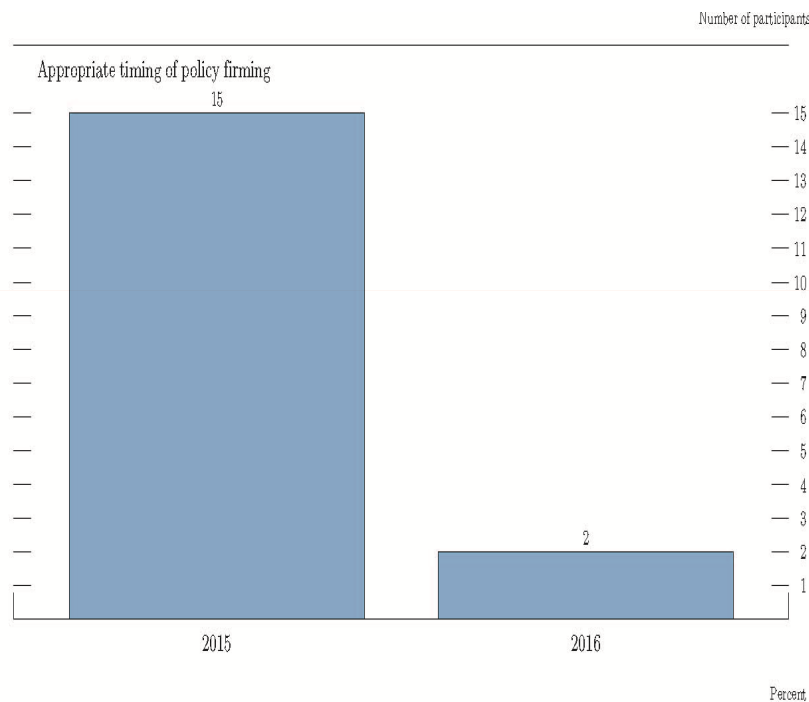
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How Can We Use Stress Test Results?

Assess Impact of Near Term Increases in Interest Rates

- Higher rates seem likely in the near future
Though, we've been saying this for awhile...



Source: Federal Reserve – FOMC Statement – June 17, 2015



How Can We Use Stress Test Results?

Assess Impact of Near Term Increases in Interest Rates

➤ Include borrowers with floating rates and those with rate re-sets or **maturities** within established time horizon

(\$000)	Pre-Stress	Scenario I					
		+50 bps	+100 bps	+150 bps	+200 bps	+300 bps	+400 bps
Criticized Loans	32,008	43,558	56,462	73,286	101,570	184,687	243,869
Classified Loans	18,192	28,831	37,285	49,524	63,257	134,690	190,383
CRE Pass* Loans (CRE, Multifamily & Construction)	746,691	721,181	710,277	697,453	669,169	586,052	526,870
Non-CRE Pass* Loans - NOT STRESSED (Resi, C&I & Other)	656,873	656,873	656,873	656,873	656,873	656,873	656,873
Total Loans from Call Report	1,471,558	1,471,558	1,471,558	1,471,558	1,471,558	1,471,558	1,471,558
Average Loans from Call Report	1,376,505	1,376,505	1,376,505	1,376,505	1,376,505	1,376,505	1,376,505
Criticized % Total Loans	2%	3%	4%	5%	7%	13%	17%
Classified % Total Loans	1%	2%	3%	3%	4%	9%	13%

ASC 450 (FAS 5) Reserve Change vs. Pre-Stress	-	2,086	3,779	5,901	8,690	18,577	25,689
ASC 310 (FAS 114) Reserve Change vs. Pre-Stress	-	373	457	747	932	1,057	1,375
Loan Loss Provision Based on Estimated Reserve Changes	-	2,460	4,237	6,648	9,621	19,634	27,063

For illustrative purposes only - amounts may not foot.



How Can We Use Stress Test Results?

Capital Planning Process

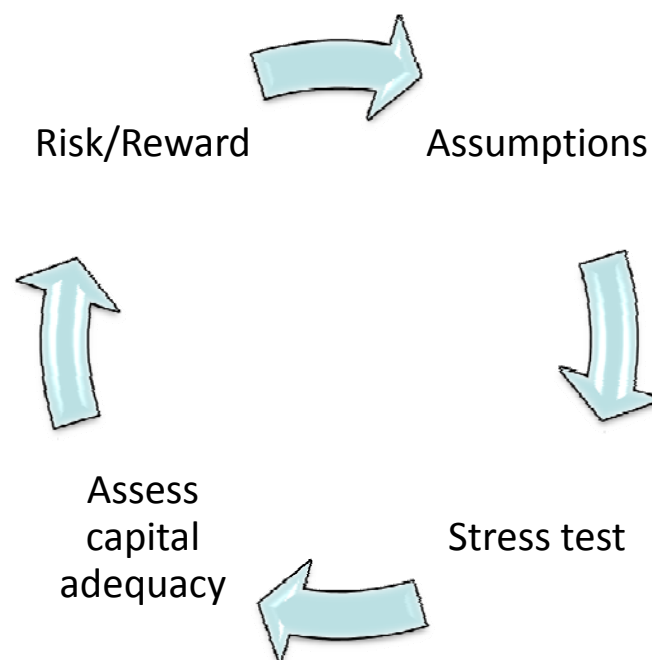
➤ “The OCC expects every bank, regardless of size or risk profile, to have an effective internal process to (1) assess its capital adequacy in relation to its overall risks, *and* (2) to plan for maintaining appropriate capital levels.”

-Community Bank Stress Testing – OCC – 2012

➤ Stress assumptions used in capital planning process

➤ Challenge approach to capital plan versus stress test (and vice versa)

➤ ALLL projections, expenses





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Next Phase of Stress Testing

- Concepts and process becoming more universally understood
- Regulatory expectations continue to evolve, but focus often shifting from implementation to more “qualitative “ issues
 - ✓ Controls
 - ✓ Consistency / Integration with other Capital Planning and Forecasting
 - ✓ Concentration management / limits
 - ✓ Using stress test results
 - ✓ Essentially embedding stress test inputs, analysis, outputs into overall risk management and planning processes



Importance of Controls

- Past two years, all CCAR “fails” have been due to qualitative issues
 - No objections based on quantitative concerns / results
- CCAR not applicable for community banks but still useful lessons learned
- Qualitative Assessment focuses on “internal practices a BHC uses to determine the amount and composition of capital it needs to continue to function throughout a period of severe stress”
 - *Comprehensive Capital Analysis and Review 2015: Assessment Framework and Results*, March 2015 – Board of Governors of Federal Reserve
 - ✓ Processes surrounding development and implementation of stress scenarios
 - ✓ Robust governance for overall process, data, model development, control, management judgment and documentation
 - ✓ Extent to which capital plan and analysis addresses key firm-specific risks
 - ✓ “Challenge” approach
 - ✓ Expectations differ depending upon size, scope of operations, activities and systemic importance



CCAR - 2015

Deutsche Bank Trust Co

- CCAR first-timer
- “Numerous and significant deficiencies” across several areas of the capital planning process, including risk identification
- Posted strongest quantitative results (a red flag itself???)

Santander

- Failed for 2nd year in a row
- “Widespread and critical deficiencies across” its planning procedures
- Issues with internal controls and risk management

Bank of America

- Conditional approval
- Address weaknesses in ability to measure losses and revenue and in other internal controls by Sept 30th

CCAR 2014 – Qualitative “Fails”

- Citigroup
- HSBC North America
- RBS Citizens Financial Group
- Santander



What Does this Mean for a Community Bank?

➤ Data

- Processes for gathering and updating necessary data
 - On-boarding, annual reviews, loan review, etc
 - Not a one-time “fire drill”
 - Processes for validating
- Identifying / dealing with “stale” data
 - Get ahead of the issue
 - Consider where you are in the credit cycle
 - Leverage other information to make adjustments (with conservative bias)
- Leveraging data for other purposes (CECL)

➤ Scope

- Not just CRE.....
- Other concentrations
- C&I, Leveraged Loans, etc



What Does this Mean for a Community Bank?

➤ “Challenge” Approach

- Process for ongoing reviewing / questioning stress test framework, assumptions, data, results
- “Does it make sense?”
- Are assumptions severe enough?
- Benchmarking / back testing
 - Compare results to historical / peers / external data
- Using stress testing to challenge bank’s existing business model or planned changes to the model – what could go wrong, how bad could it get, and what hidden risks are embedded in the business



What Does this Mean for a Community Bank?

➤ **Controls**

- Model validation and beyond....
- Processes and checks / balances that confirm inputs and outputs can be relied upon

➤ **Governance**

- Integrate stress testing with other planning and risk management functions
- Board and senior management oversight
- Management “ownership” of the process
- Should not be just a compliance exercise.... Use results of stress testing in decision-making



CEIS REVIEW INC.

ABOUT CEIS REVIEW

CEIS Review is an independent consulting firm serving the commercial and savings bank communities as well as those of other commercial lending institutions.

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