Stress Testing: Managing an Essential and Expected Process for Community Banks

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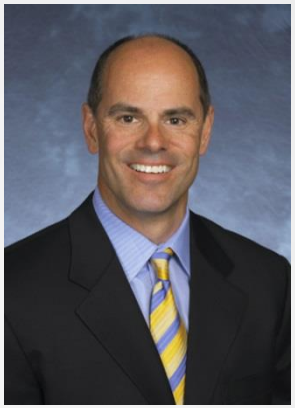
Craig Mancinotti - Joined the firm in 1982 and co-manages the firm's investment banking and strategic consulting divisions. Received BBA and MBA degrees from the University of Toledo. Served as an instructor at the Stonier Graduate School of Banking and the Bank Administration Institute School. Served for ten years as a director of a $400 million Midwest community bank. Annual speaker at "Acquire or Be Acquired" conferences. Registered representative of Investment Bank Services, Inc. (broker/dealer); holds Series 63 and 79 (Investment Banking) licenses.

Gerry Smith - Joined the firm in 2013 and spearheads the company's activities in the western United States. With more than 30 years of professional banking and financial management experience, he has held leadership positions as a community bank CEO and director. He has also served in financial management and accounting positions with regional banking companies and a national accounting firm. Received a Bachelor's degree in Accounting from Bowling Green State University, and is a graduate of the Ohio School of Banking.



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Austin Associates Overview

- Community bank advisors for more than 40 years
- Relationship-based consulting business model, providing customized services through multiple practice areas

  Investment Banking

  Strategic Consulting

  Financial Management

  Technology Solutions

- Owners are consultants/managers
- Over 200 bank/thrift clients in 2014 from 26 states
- Nationally ranked leader in community bank M&A for 3 decades

Stress Testing Webinar Agenda

- Background and History of Stress Testing
- Case Study
- Closing Perspectives and Lessons Learned
- Questions

“A Crisis is a Terrible Thing to Waste”

Quote from noted economist Paul Romer, November 2004, referring to rapidly rising education levels in other countries compared to the U.S.

- Stress testing is an outgrowth of the “Financial Crisis”
- SCAP – Supervisory Capital Assessment Program – April 2009
- CCAR – Comprehensive Capital Analysis and Review – 2011
- DFAST – Dodd-Frank Act Stress Testing – 2013
- Initially, the largest 19 U.S. banking organizations
- “Stress Testing” has quickly “trickled down” to smaller banks
- Regulators demand strong credit risk management practices
- Stress Testing is considered a strong credit risk management practice

Supervisory Capital Stress Testing

Supervisory Capital Stress Test Programs/Methodologies

1. Supervisory Capital Assessment Program ("SCAP") – April 2009:
   - Largest 19 U.S. Bank Holding Companies
   - Projected baseline and more adverse loss scenarios for 2009 – 2010 time period
   - Baseline scenario intended to represent consensus view about depth and duration of the recession
   - Two-year baseline loss rates – categories ranged from 1.5% to 20%
   - More adverse scenario designed to illustrate weaker economic conditions and longer lasting recession than baseline scenario
   - More adverse loss rates – categories ranged from 3% to 28%, with estimated two-year loan losses of $455 billion
   - Two-year cumulative loss rate in more adverse scenario equaled ***9.1%*** of total loans
   - More adverse scenario results showed:
     - ✓ 10 of 19 firms needed additional Tier 1 capital totaling $185 billion ($175.5 billion in common tier 1 capital and $9.5 billion in tier 1 capital)

Supervisory Capital Stress Testing

Supervisory Capital Stress Test Programs/Methodologies (Con't)

2. Comprehensive Capital Analysis and Review ("CCAR") – 2011:
   - Performed annually and originally based on largest 19 U.S. Bank Holding Companies
   - CCAR is bigger than stress testing, it evaluates a BHC's capital adequacy and processes and planned capital distributions
   - If Federal Reserve objects to BHC's capital plan, the BHC may not make any capital distribution without consent from Fed
   - Since 2014, includes BHCs > $50 Billion in Assets (31 companies in 2015 test)
   - Based on baseline, adverse and severely adverse scenarios
   - Scenarios include 28 variables: various economic activity and price measures, aggregate measures of asset prices and financial conditions and measures of interest rates
   - Baseline scenario similar to average projections from surveys of economic forecasters
   - Adverse scenario characterized by a global weakening in economic activity and an increase in inflationary pressures
   - Severely adverse scenario features a substantial weakening in global economic activity and large reductions in asset prices
     - ✓ **10% peak unemployment**
     - ✓ **60% drop in equity prices**
     - ✓ **25% decline in housing prices**
     - ✓ **$340 billion in loan losses over 9-quarter planning horizon**

Supervisory Capital Stress Testing

Supervisory Capital Stress Test Programs/Methodologies (Con't)

3. Dodd-Frank Act Stress Testing ("DFAST") – 2013:
   - Performed annually and based on BHCs > $50 Billion in Assets (31 BHCs in 2015 test)
   - Forward-looking quantitative evaluation of the impact of stressful economic and financial market conditions on BHC capital
   - Test designed by Federal Reserve; each company conducts annual company-run stress tests under the same supervisory scenarios as the Fed as well as a mid-cycle stress test under company-developed scenarios
   - Based on baseline, adverse and severely adverse scenarios
   - CCAR and DFAST are related programs, however DFAST does not assess processes involved in the bank's capital planning processes
   - DFAST assumes historical dividends, so DFAST can only be used to help anticipate the CCAR results

Regulatory Expectations

- Stress testing – more than recommended – EXPECTED
- Practices should be consistent with **size, complexity and risk characteristics** of the loan portfolio
- Direct senior management and the Board to maintain strong credit risk management practices
- Heightened vigilance on the part of supervisors to assure standards are met in the areas of
    - Capital Adequacy
    - Liquidity Planning
    - Risk Management

Regulatory Expectations

- Stress testing at the portfolio level considers risk in all loan classifications, irrespective of loan type, purpose or collateral.
- Stress testing at the loan level is critical to evaluating the current and future viability of the borrower or business.
- Stress testing commercial real estate loans is critical to managing concentrations that could quickly sap capital. If the market or borrower deteriorates, collateral dependency may lead to unanticipated loss.

Loan Portfolio Stress Testing Process

- Delinquency and loss rates by loan type, concentration and/or any other key category over a select timeframe
- Analysis of your bank's asset quality indicators
- Analysis of market factors and relevance to delinquency and loss experience
- Have changes to your credit "culture" impacted portfolio performance
- Develop forecasted revenue, loss and loan portfolio balances
- Develop projected stress loan rates by various portfolio segments
- Evaluate impact on revenue, dividends and capital
- Evaluate capital levels in relation to regulatory and internal targets
- Develop action plans in accordance with stress test results

Portfolio Level Stress

Have Results been Considered at Portfolio Level?

- Using **bank specific** information – look at loss rates back 4/8/12 quarters – consider peer - adjust as needed
- Considering **portfolio** characteristics – concentration types – look at sub-categories – hotels, multifamily, office
- For **all loan classifications**, regardless of loan type, purpose or collateral
- Using **multiple loss scenarios** based on past performance, portfolio composition, origination vintage, borrower characteristics, local and national economic environment
- **Ultimately evaluating impact on earnings and capital**

Concentration Risk

Look for Expanded Identification, Limits and Oversight Expectations

- Expand concentration analysis and reporting
- Measure across business lines; look for common sensitivity to economic, financial or business developments
- Look at marketplace – key employees in area – consider number of borrowers of all loan types relying on that employer
- Consider correlation of industries that act alike under economic contraction – larger combined exposure to capital
- Portfolio limits – go beyond setting limits against total loans and total capital – set limits considering asset quality measures/trends
- Does current board reporting focus on this risk – point-in-time and trend analysis

Stress Testing - Basics

Is the Bank's Process Meeting the Basics?

- Consider higher concentrations
- Look at asset quality measures by portfolio type
- Consider peer experience as needed – UBPR or custom
- Look at budget forecasts – is budget looking more like your stress results?
- Ensure you consider other implications of the stress:
  - Capital contingency planning
  - Risk rating implications should stress happen
  - How does that impact allowance requirements, origination strategy
  - Develop a "credit risk elevation plan" for loans exhibiting weakness under the stress

Stress Test Case Study

Quantifying the effect of stressed loss rates on reserves, revenue and capital

- Establish internal capital targets to measure against projections
  - ✓ Tier 1 leverage, Tier 1 RBC, Total RBC and CET1 Ratio
- Stress Test Scenarios
  - ✓ Budget
  - ✓ Moderate
  - ✓ More Adverse
  - ✓ Acute Stress – reverse engineered scenario to estimate level of credit losses necessary to breach internal capital targets
- Determination of estimated loss rates
  - ✓ Start with the bank's "budget"
  - ✓ Historical bank, peer group and state-specific loss rates
  - ✓ Historical loss rates based on trailing 4, 8 and 12 quarters
  - ✓ Don't forget loss rates during the crisis!
- Baseline (or Budget) core operating earnings
  - ✓ Pre-tax, pre-provision ("PTPP") income
  - ✓ Impact to PTPP income in "stressed" scenarios

Step 1: Estimating Loss Rates

		Net Charge-Offs as a % of Average Loans										Avg. Highest 2 Periods
		2006Y	2007Y	2008Y	2009Y	2010Y	2011Y	2012Y	2013Y	2014Y	2015Y	
Nation	Aggregate	0.39%	0.58%	1.30%	***2.47%***	***2.54%***	1.53%	1.08%	0.69%	0.49%	0.43%	2.50%
Ohio	Aggregate	0.36%	0.52%	1.06%	***2.42%***	***2.07%***	1.17%	0.83%	0.47%	0.39%	0.29%	2.25%
	25th Pct.	0.06%	0.07%	0.10%	0.15%	***0.18%***	***0.20%***	0.16%	0.10%	0.11%	0.07%	0.19%
	Median	0.12%	0.19%	0.23%	***0.40%***	***0.33%***	0.39%	0.33%	0.22%	0.19%	0.15%	0.37%
	75th Pct.	0.26%	0.35%	0.58%	0.82%	***0.89%***	***0.86%***	0.78%	0.46%	0.36%	0.31%	0.87%
Peer	Aggregate	0.25%	0.30%	0.60%	***1.20%***	***1.10%***	0.75%	0.60%	0.35%	0.20%	0.15%	1.15%
	25th Pct.	0.10%	0.15%	0.20%	0.35%	***0.45%***	***0.40%***	0.25%	0.05%	0.10%	0.05%	0.43%
	Median	0.15%	0.25%	0.35%	***0.75%***	***0.80%***	0.55%	0.40%	0.20%	0.15%	0.10%	0.78%
	75th Pct.	0.35%	0.40%	0.65%	***1.50%***	***1.35%***	1.00%	0.75%	0.40%	0.30%	0.25%	1.43%
Subject Bank		0.05%	0.10%	0.40%	0.55%	***0.75%***	***0.90%***	0.65%	0.30%	0.10%	0.05%	0.83%

Highest two consecutive NCO rates between 2006Y - 2015Y

Note: Peer statistics include all banks in the peer group.
State statistics include only those banks reporting net-charge offs for each reporting period.
Due to changes in reporting, certain data may not be available for all banks for all periods. Statistics calculated based on information as available and may be based on a limited number of banks for certain periods.

The "Art" of Estimating Loss Rates

- Loan portfolio categories
  - ✓ Stratify portfolio into categories with similar loss characteristics
  - ✓ Call Report categories and sub-categories works for nearly all community banks (Schedule RC-C)
  - ✓ Internal reporting categories and sub-categories
  - ✓ Need for sufficient sample size
- Historical time periods
  - ✓ 4-quarter, 8-quarter versus 12-quarter
  - ✓ Loss rates during the financial crisis to estimate "worst case"
- Loan level stress testing
  - ✓ High risk or "at risk" portfolios - Construction, CRE, etc.
  - ✓ Stress loans based on LTV, DSC, etc. (system reporting limitations)
  - ✓ Select sample
  - ✓ Extrapolate over portfolio
- Subjective adjustments nearly always appropriate and necessary

Case Study: Budgeted/Stressed Loss Rates

	Budget		Moderate		More Adverse		Acute Stress	
	Aggregate 2-Yr. Losses per Mngt.		Peer 25th Percentile		Peer Median		Peer 75th Percentile x 1.25	
Loan Type	*Average Annual Est. Loss*	*Annual Loss Rates*	*Average Annual Est. Loss*	*Annual Loss Rates*	*Average Annual Est. Loss*	*Annual Loss Rates*	*Average Annual Est. Loss*	*Annual Loss Rates*
1-4 Construction Loans	$25	0.25%	$258	2.65%	$474	4.98%	$1,100	12.36%
Other Construction Loans	$50	0.10%	$705	1.43%	$1,725	3.57%	$5,017	11.15%
Construction & Land Development	**$75**	**0.13%**	**$963**	**1.63%**	**$2,199**	**3.80%**	**$6,117**	**11.35%**
Loans Secured by Farmland	**$0**	**0.00%**	**$125**	**0.31%**	**$452**	**1.14%**	**$1,195**	**3.08%**
Revolving 1-4 Family (HE Lines)	$75	0.15%	$125	0.25%	$315	0.63%	$740	1.50%
Closed End First Lien 1-4 Family	$100	0.10%	$155	0.16%	$360	0.36%	$940	0.95%
Closed End Junior Lien 1-4 Family	$38	0.38%	$61	0.61%	$144	1.46%	$367	3.81%
Total 1-4 Family	**$213**	**0.13%**	**$341**	**0.21%**	**$819**	**0.51%**	**$2,047**	**1.30%**
Multifamily	**$13**	**0.02%**	**$505**	**0.68%**	**$1,100**	**1.49%**	**$2,785**	**3.86%**
Secured by Owner-Occupied CRE	$25	0.02%	$360	0.24%	$990	0.66%	$2,585	1.75%
Secured by Other CRE Properties	$25	0.02%	$690	0.54%	$1,470	1.17%	$5,125	4.19%
Nonfarm/Nonresidential Loans	**$0**	**0.00%**	**$1,050**	**0.38%**	**$2,460**	**0.89%**	**$7,710**	**2.86%**
Total Real Estate Loans	**$300**	**0.05%**	**$2,984**	**0.49%**	**$7,030**	**1.16%**	**$19,854**	**3.35%**
Commercial & Industrial	**$135**	**0.08%**	**$625**	**0.36%**	**$1,900**	**1.10%**	**$6,150**	**3.64%**
Credit Card Loans	$0	0.00%	$41	1.65%	$70	2.86%	$163	6.99%
Other Consumer Loans	$10	0.14%	$29	0.42%	$56	0.81%	$129	1.87%
Total Consumer Loans	**$10**	**0.11%**	**$70**	**0.74%**	**$126**	**1.34%**	**$292**	**3.17%**
Total Other Loans	**$5**	**0.17%**	**$47**	**1.59%**	**$207**	**7.42%**	**$762**	**34.03%**
Total Loans	**$500**	**0.06%**	**$3,726**	**0.47%**	**$9,263**	**1.17%**	**$27,057**	**3.50%**
Total Estimated 2-Year Losses	**$1,000**	**0.13%**	**$7,451**	**0.94%**	**$18,526**	**2.34%**	**$54,115**	**7.00%**

Step 2: Key Model Inputs

Quantifying the effect of stressed loss rates on reserves, revenue and capital

- Estimated credit losses based on preceding analysis
- PTPP Income
  - ✓ Budget scenario is the “baseline” plus 3 stressed scenarios
  - ✓ Adjust PTPP income for reduction in interest income due to NCO’s, increase in loan collection costs and balance sheet deleveraging
- ALLL Level
  - ✓ Beginning ALLL is the same in all scenarios
  - ✓ Projected ALLL increases in stressed scenarios
- Balance Sheet reduction in stressed scenarios
  - ✓ Projected loan balances
  - ✓ Historical practice during financial crisis
  - ✓ Need to consider NCOs and liquidity needs
- Dividends – present level and projected level in stressed scenarios

Case Study: Key Model Inputs

	Budget	Moderate	More Adverse	Acute Stress
	Aggregate 2-Yr. Losses per Management	Peer 25th Percentile	Peer Median	Peer 75th Percentile x 1.25
Total Estimated 2-Year Losses	$1,000	$7,451	$18,526	$54,115
Annual Loss Rate	0.06%	0.47%	1.17%	3.50%
Two-Year Loss Rate	0.13%	0.94%	2.34%	7.00%
12/31/2017 Loan Balance	$950,000	$906,049	$857,475	$671,885
12/31/2017 Tangible Assets	$1,134,000	$1,100,500	$1,067,000	$933,000
Projected ALLL / Total Loan Ratio	1.50%	1.84%	2.19%	3.14%
ALLL on 12/31/2017 Loan Balance	$14,250	$16,694	$18,736	$21,095
2-Year PTPP Projection	$35,000	$33,362	$31,579	$24,795
Bank Dividend Distribution	$16,000	$16,000	$12,000	$0

Calculation of "Resources to Absorb Losses"

Subject Bank	Budget Aggregate 2-Yr. Losses per Management	Moderate Peer 25th Percentile	More Adverse Peer Median	Acute Stress Peer 75th Percentile x 1.25
Bank's Two-Year PTPP Projection (1)	$35,000	$33,362	$31,579	$24,795
Plus: Actual 12/31/2015 ALLL	$12,500	$12,500	$12,500	$12,500
Minus: ALLL on 12/31/2017 Loans	($14,250)	($16,694)	($18,736)	($21,095)
Total Resources to Absorb Losses	**$33,250**	**$29,168**	**$25,343**	**$16,200**
Minus: Estimated 2-Year Losses	($1,000)	($7,451)	($18,526)	($54,115)
Net Resources After Losses	**$32,250**	**$21,717**	**$6,818**	**($37,915)**
Net After-Tax Resources (2)	**$20,963**	**$14,116**	**$4,431**	**($24,645)**
2-Year Dividend Distribution	($16,000)	($16,000)	($12,000)	$0

(1) PTTP for Budget Scenario is based on projected financial performance as provided by management.
PTTP = Pre-Tax Pre-Provision (net interest income + noninterest income – noninterest expense).
Represents earnings capacity that can be applied to capital or loan losses.
(2) Based on a 35.0% tax rate.

Case Study: Pro Forma Capital Ratios

	Budget			Moderate			More Adverse			Acute Stress		
Total Estimated 2-Year Losses	**$1,000**			**$7,451**			**$18,526**			**$54,115**		
Annual Loss Rate	0.06%			0.47%			1.17%			3.50%		
12/31/2017 Loan Balance	$950,000			$906,049			$857,475			$671,885		
Projected ALLL / Total Loan Ratio	1.50%			1.84%			2.19%			3.14%		
ALLL on 12/31/2017 Loan Balance	$14,250			$16,694			$18,736			$21,095		
2-Year PTPP Projection	**$35,000**			**$33,362**			**$31,579**			**$24,795**		
Bank Dividend Distribution	**$16,000**			**$16,000**			**$12,000**			**$0**		
	2015 Well-Capitalized Guidelines	*Fully Phased-In Capital Guidelines*	*Internal Bank Targets*	*2015 Well-Capitalized Guidelines*	*Fully Phased-In Capital Guidelines*	*Internal Bank Targets*	*2015 Well-Capitalized Guidelines*	*Fully Phased-In Capital Guidelines*	*Internal Bank Targets*	*2015 Well-Capitalized Guidelines*	*Fully Phased-In Capital Guidelines*	*Internal Bank Targets*
Target Leverage Ratio	*5.00%*	*5.00%*	*8.00%*	*5.00%*	*5.00%*	*8.00%*	*5.00%*	*5.00%*	*8.00%*	*5.00%*	*5.00%*	*8.00%*
Pro Forma Leverage Ratio		**9.26%**			**8.92%**			**8.66%**			**8.08%**	
Excess/(Deficit)	**$48,263**	**$48,263**	**$14,243**	**$43,091**	**$43,091**	**$10,076**	**$39,081**	**$39,081**	**$7,071**	**$28,705**	**$28,705**	**$715**
Target Tier 1 Risk-Based Ratio	*8.00%*	*8.50%*	*10.00%*	*8.00%*	*8.50%*	*10.00%*	*8.00%*	*8.50%*	*10.00%*	*8.00%*	*8.50%*	*10.00%*
Pro Forma Tier 1 Risk-Based Ratio		**11.57%**			**11.14%**			**10.83%**			**10.10%**	
Excess/(Deficit)	**$32,387**	**$27,851**	**$14,243**	**$27,684**	**$23,282**	**$10,076**	**$24,143**	**$19,875**	**$7,071**	**$15,643**	**$11,911**	**$715**
Target Total Risk-Based Ratio	*10.00%*	*10.50%*	*12.00%*	*10.00%*	*10.50%*	*12.00%*	*10.00%*	*10.50%*	*12.00%*	*10.00%*	*10.50%*	*12.00%*
Pro Forma Total Risk-Based Ratio		**12.82%**			**12.39%**			**12.08%**			**11.35%**	
Excess/(Deficit)	**$25,583**	**$21,047**	**$7,439**	**$21,081**	**$16,679**	**$3,473**	**$17,741**	**$13,473**	**$669**	**$10,045**	**$6,313**	**($4,883)**
Target CET1 Risk-Based	*6.50%*	*7.00%*	*8.50%*	*6.50%*	*7.00%*	*8.50%*	*6.50%*	*7.00%*	*8.50%*	*6.50%*	*7.00%*	*8.50%*
Pro Forma CET1 Risk-Based		**11.57%**			**11.14%**			**10.83%**			**10.10%**	
Excess/(Deficit)	**$45,995**	**$41,459**	**$27,851**	**$40,890**	**$36,488**	**$23,282**	**$36,947**	**$32,679**	**$19,875**	**$26,839**	**$23,107**	**$11,911**

**Fully phased-in capital guidelines include a capital conservation buffer which increases in each annual period to 2.5% in 2019.

Stress Testing

The Essential Step to Continued Capital Preservation

- Evaluate the sufficiency of earnings to meet challenges of declining asset quality
- Identify potential impact to capital levels
- Stress test the portfolio to quantify the impact of changing economic conditions on asset quality, earnings and capital
- Focus on the more vulnerable segments of the loan portfolio in relation to the prevailing market environment and institution's business strategy
- The stress test results will indicate when a capital contingency plan is required.

Ongoing Assessment

- Process is NOT a one-time exercise
- Ongoing trend analysis
- Performance to peer
- Historical performance
- External factors
- Monitor key risk indicators

Credit Risk Management

Key Elements Regulators will Inspect

- Board and management oversight
- Proactive portfolio management
- Management information systems
- Market analysis
- Credit underwriting standards and analyses
- Independence and validation in appraisal process
- Portfolio stress testing
- Credit risk review function
- Process to integrate into ALLL, capital, strategic plan

QUESTIONS AND ANSWERS

SPEAKER CONTACT INFORMATION

Thank you for joining us today! We would appreciate hearing from you.

If you have questions or comments regarding today's Webinar, or if you would like to discuss how Austin Associates can assist your bank with any aspect of stress testing, please contact us.

Thank you!

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