

Ardmore Banking Advisors

Advisors to Financial Institutions

CRE Portfolio Stress Testing Program for Income Producing Properties

Overview:

CRE Portfolio Stress testing is a key exercise for banks that provides important guidance about potential risk exposure within their CRE portfolio. This information – usually based on testing the ability to withstand market changes within portfolio concentration categories, can inform a bank of potential unseen exposure. Unlike individual loan stress testing typically performed during underwriting, the results of the portfolio stress test are not intended to be a transactional analysis of the creditworthiness of individual loans. The results of the tests themselves do not create a specific number or adjustment factor that can be applied quantitatively to the credits.

The results of a well designed CRE Portfolio Stress Testing program offers useful predictive credit information about potential relative risk in CRE concentration segments or the CRE portfolio as a whole. This information is typically directional and should be a part of a bank's over all credit/risk assessment process. The very exercise of CRE Portfolio Stress Testing helps lead a Bank through the process of looking at concentrations and becoming aware of potential risk in loans with like characteristics. It can point to areas of potential increased exposure unseen by viewing only individual borrowers, and provide information that can help banks guard against unexpected losses due to market and valuation changes. Results of a portfolio stress testing program help direct the bank to selected concentration groups that may be at risk, and by itself the results of the test can serve as a "compass" to help inform a bank of risk direction within the portfolio. Stress test results can also be used to help assess potential losses and potential impact a bank's capital allocation.

Most banks will start designing their program by breaking down their CRE portfolio into concentration segments for aggregate review. Typical concentrations to consider for stress testing include property type by owner occupied status, project location, risk rating and product. Usually the local market conditions and institution specific lending patterns will be a major determining factor of which CRE concentrations to use for stress testing.

After CRE concentrations have been identified for stress testing, reasonable scenarios of "shocks" need to be established for testing against these concentration segments. These tests are likely to be variable based on the intensity of shock – such as low, moderate and severe, and utilize a number of market/economic indicators like NOI, cap rate and debt service amount. The results of these tests will be reports that will show the aggregate impact of the various stress scenarios on the loan concentration segment loan values. Meaningful measurements showing changes in loan value including LTV and DSC are compared pre and post stress to evaluate the impact of the test.

As the bank reviews these stress test results, they will look at the amount of value change by segment, looking in particular for the aggregate change in total LTV and DSC for the segment in relationship to the change to the entire portfolio as a whole and/or other segments tested. They will also look at how much capital is tied to CRE portfolio segments that are potentially exposed to more risk.

This resulting information may suggest heightened exposure for certain portfolio concentration segments under times of market stress. This information could lead a bank to do further analysis of the condition of the underlying credits in that sector, or to look in more detail at the current market conditions that influence borrower/loan performance in that sector. Based on related market assessments, reviews of specific loans and any mitigating credit factors, the bank may choose to look to modify terms with specific borrowers or change their lending practices in specific concentration

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sectors. At a minimum the bank will be better aware of where credit deterioration may develop more quickly within their CRE portfolio and be able to take proactive steps to limit their exposure.

Steps to establishing a CRE Portfolio Stress Testing Program:

1. Collect CRE Loan Data (Industry Best Practice)

- a. Identify CRE loan data fields required for concentration reporting and stress testing
 - Property Types, Occupancy Status
 - Cap Rates
 - Project Location
 - Appraised Value
 - LTV
 - NOI
 - DSC
- b. Identify data available in source systems
 - Core Accounting Systems
 - Appraisal Systems
 - Market Data (Cap rates, trends)
- c. Establish sources for data not archived
 - Loan Files
 - RM's
- d. Enter missing data into source systems or other automated repository
- e. Review of data accuracy and freshness
 - Establish standards for updates of appraisals and other key data
- f. Establish process to clean up data
 - Resource allocation
 - Priorities (Which data first, etc.)
 - Plan
- g. Address Loan coding standards
 - At booking
 - Maintenance, on-going
- h. Prioritize data collection/entry process
 - Largest credits
 - Credits in volatile segments
 - 80/20 Rule – largest 25 borrowers

2. Get Management Buy-in, Overcome Road Blocks

- Thinking that stress testing requires use of sophisticated models
- Perception that “conservative” underwriting standards negates the need for stress testing
- Belief that staff lacks the expertise to perform stress tests
- Management perception that the costs outweigh benefits
- Feeling that is not required by regulators

3. Establish Stress Testing Tool/Capabilities

- Identify internal processes/tools available for concentration reporting and stress testing
- Define objectives and extent of testing requirements
- Build or purchase capabilities
- Install
- Update data

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4. Establish Stress Testing Process

a. Review and Identify Concentrations to Test

(Should an institution be too small to have concentration diversity within their CRE portfolio, they may need to stress their portfolio as a whole, or only by risk rating category.)

- Largest in the portfolio, most capital associated
- Highest risk average ratings
- Most volatile local market conditions

b. Establish Stress Parameters

- NOI/Cash Flow
- Debt Service
- Cap Rate
- Vacancy Rates
- Interest Rate
- Value
- Charge offs
- Risk Rating

c. Establish Stress Scenarios

- Low
- Moderate
- Severe

d. Establish Stress Amounts

- Historical loss
- Based on industry metrics
- Reasonable Estimates

e. Run scenario tests

- Frequency
- Number of Scenarios

f. Review results

- Assess reasonableness of calculations
- Review data inputs in case of outliers caused by bad data
- Investigate detail and establish mitigating risk factors (if any)

g. Report Results

- Credit Management
- The Board

h. Repeat Stress Testing Program

- Adjust Scenarios
- Adjust Concentrations to test

Sample CRE Income Producing Property Portfolio Stress Testing Scenarios and Parameters using CREInsight™ Program

Overview:

There are a number of different approaches banks can take when looking at creating a meaningful CRE portfolio stress testing program. For example, collateral/income based scenarios will look at the impact of how property cap rates increase causing collateral value to decline and loan level LTV ratios to increase. Vacancy rate increases will cause NOI and DSC to decrease. How far must NOI drop based on vacancy rates before a given loan falls below a 1.0x DSC ratio?

It is important to remember that when one is doing portfolio stress testing on income producing properties, one is assessing the impact of the stress based on Probability of Default (“POD”) – that is the likelihood that the borrower may not be able to repay the loan on time or default. This means

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that additional collateral will not impact the value of the property in LTV calculations unless the NOI/Cash flow is directly affected. If the additional collateral doesn't "throw off cash" it is instead a mitigating factor to take into account when assessing the Loss Given Default (LGD) and does not add to value in this approach.

Strictly market based scenarios address interest rate increases causing DSC to decrease on variable rate loans. This can be reflected in an increase in debt service as well.

Capital based scenarios look more at charge-off rates increasing causing Tier 1 capital and regulatory ratios to decrease. This can be harder to use for portfolio wide stress testing as it requires extensive relevant loss history as a reference.

In order to create a CRE Portfolio Stress testing tool that would be affordable and simple to use for banks of all sizes, Ardmore Banking Advisors selected three stress/shock parameters to create reports to help banks look at the impact of stress on collateral/income and market determinants.

Within CREInsight™ the bank can raise or lower NOI by percentages to reflect changes in collateral value and cash flow. The bank can also manipulate total annual debt service amounts by percentages and cap rates by basis points to simulate the impact of market changes. Stress testing scenarios can show how any or all of these parameters can impact the average weighted LTV and DSC ratios of selected CRE portfolio concentrations.

Once the summary portfolio concentration reports are reviewed, the bank can look at their capital allocation percentages for the concentration sector involved, and run detail post stress test reports to look at the stress impact on individual credits within that sector.

What follows are some CRE portfolio stress testing scenarios for income producing properties currently used by CREInsight™ banks:

1. Concentration Based Approach

Select most volatile concentration segment (EG: Retail) or any concentration larger than 10% of the portfolio.

Use the CREInsight product to lay out exceptions outliers regarding 1.25x DSCR and 75% LTV based on the following stress test scenarios:

- Shock NOI by 10% and 30% decreases to reflect an increase in vacancy rates
- Shock debt service by 10% and 30% to simulate a 1%, 3% increase in interest rate
- Increase Capitalization 1% and 3% (100, 300 basis points) for market changes

2. Smaller Portfolio Capital Approach:

Three tests: Mild, Moderate and Severe

- Stress Cap Rate 1%, 2.5%, 5%
- Stress NOI -5%, -12%, -20%
- Back into interest rate stress (1/2%, 1% and 2%) by looking at newly stressed NOI results and figuring out new payments to create Debt Service changes

Based on the results of the test look at the impact on reserves – if DSC is 1.0x or below, loans may eventually be considered substandard. If LTV is 100% or above, a bank may need to adjust reserves for the amount over the regulatory limits as impaired.

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3. Risk Rating Migration Approach:

Stress test the largest pass and pass watch rated loans within each Property Type. Pass rated loan stressing will indicate potential migration to the watch list and identify non policy compliant loans.

Watch list loan stressing will assist in the projection of future loan loss provisions and ultimately in charge-offs and additional capital requirements.

- Annual DS % stressed by 100 and 200 bps
- Cap rates could be increased by 50 and 100 bps for recently appraised properties (within last 18mos.) and 200 and 300 bps for properties with stale appraisals
- NOI's can be downgraded according to the following guidelines:
 - Multi-family - 5 and 10%
 - Retail - 15 and 30%
 - Office - 10 and 20%
 - Industrial/warehouse - 5 and 10%
 - Hotel/motel - 15 and 25%
 - Other - 10 and 20%.
- Stress the residential construction portfolio by further slowing sales pace (absorption) and release price. Must have borrower specific sales and price data to suggest how to further stress pace and price.

4. Example Stress Test Reports (From CREInsight™)

- Selected Zip Code Concentration Segment with 15% Reduction in NOI, 1.25 DSC/.80 LTV limits

- Summary Report

Test Bank

Stress-Test Results for CRE Portfolio As of Month Ending 2/28/2009

Stress-Test Parameter Adjustments			
NOI Adjustment:	-15.00%	Debt Service Adjustment:	0.00%
Cap. Rate Basis Adjustment:	0		
Loan-Portfolio Filter Parameters			
Purpose:	All	Property Type:	All
Industry:	0 :: All	Project Zip:	19000
Collateral:	All	Loan Structure:	All
Product:	All	Risk Rating:	All

Original Metrics of Portfolio Segment	Stress Test Metric Results				
	Annual NOI / Cash Flow	Annual Debt Service	Est Collateral Value	Avg LTV	Avg DSC
Total Commitment \$1,500,000.00	Original Data \$395,149.06	\$227,514.91	\$3,865,776.31	60.04%	2.02
Total Outstanding \$849,610.35	Adjusted Data \$335,876.70	\$227,514.91	\$3,285,909.87	70.64%	1.72
Total # Loans 4			Number of Loans with Adjusted DSC < Minimum 1		Number of Loans with Adjusted LTV > Maximum 1

- Detail Report:

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Test Bank

Detailed Stress-Test Results for CRE Portfolio

As of Month Ending 2/28/2009

Stress-Test Parameter Adjustments		
NOI Adjustment:	-15.00%	Debt Service Adjustment: 0.00%
		Cap. Rate Basis Adjustment: 0
Loan-Portfolio Filter Parameters		
Purpose:	All	Property Type: All
Industry:	0 :: All	Project Zip: 19000
Collateral:	All	Loan Structure: All
Product:	All	Risk Rating: All
DSC Min:	1.25	LTV Max: 0.8

Stress Test Results for Individual Loan

Borrower Name	Loan #	Commitment	Outstanding	Capitalization Rate	NOI / Cash Flow	Annual Debt Service	Est Collateral Value	LTV	DSC	
Eaton Minors	33445556	\$600,000.00	\$500,000.00	Original	0.1	\$57,574.53	\$30,504.97	\$575,745.30	88.84%	1.89
				Adjusted	0.1	\$48,938.35	\$30,504.97	\$489,383.51	102.17%	1.80
Rollins MVP Inc.	508750545	\$600,000.00	\$99,828.84	Original	0.14	\$30,000.00	\$15,000.00	\$214,285.71	48.49%	2.00
				Adjusted	0.14	\$25,500.00	\$15,000.00	\$182,142.86	54.70%	1.70
Jamie Moyer Retirement Homes	454444445	\$200,000.00	\$150,000.00	Original	0.1	\$90,000.00	\$31,504.97	\$900,000.00	18.67%	2.88
				Adjusted	0.1	\$78,500.00	\$31,504.97	\$785,000.00	19.61%	2.43
Aaron Rowand Surgery	2352732254	\$100,000.00	\$99,981.71	Original	0.1	\$217,574.53	\$150,504.97	\$2,175,745.30	4.60%	1.45
				Adjusted	0.1	\$184,938.35	\$150,504.97	\$1,849,383.51	5.41%	1.23