Effective Risk Management in CRE Lending

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Speakers

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**Chris Henkel** is a Senior Director in the Enterprise Risk Solutions group with Moody’s Analytics where he leads the risk measurement delivery team throughout the Americas. He has vast experience offering advisory services and custom quantitative risk solutions to clients. Chris has served as a credit risk instructor and is a frequent lecturer in industry conferences and organizations. He received his master’s and undergraduate degree from the University of Texas and graduated Valedictorian from the Southwestern Graduate School of Banking at Southern Methodist University.
Agenda

1. Market Overview
2. Improving the Measurement of CRE Credit Risk
3. Tethering Improved Risk Measurement to Business Activities
4. Commercial Mortgage Metrics (CMM) Product Overview
5. Sample uses for CMM
6. Questions
Market Overview
The credit quality of CRE portfolios is largely influenced by the health of the economy.

Quarterly Charge-Off Rates: C&I & CRE Loans
(1985-2014)

- C&I
- CRE

NCOs posted a YoY decline for the 18th consecutive quarter.

The ratio of Reserves/TLs (1.48%) is at a seven-year low.

Source: Federal Reserve, All Banks, NSA; NBER
Quarterly GDP Growth (Annualized, SA)

Source: U.S. Bureau of Economic Analysis (BEA); Moody’s Analytics (ECCA) Forecast
Unemployment

Source: U.S. Bureau of Labor Statistics (BLS); Moody’s Analytics (ECCA) Forecast
Fed Funds Rate

Source: U.S. Board of Governors of the Federal Reserve System (FRB); Moody’s Analytics (ECCA) Forecast
Commercial RE Prices

Source: Moody’s Investors Service (MIS); Moody’s Analytics (ECCA) Forecast; All Property Types
Rents and Rent Growth

Q1 2015 Nominal Rent Growth: The Top 15 Office Markets

California, Texas, and the South were rent growth leaders in Q1 2015. Over the past four years, San Francisco has consistently ranked first or second in the nation.

Source: CBRE Econometric Advisors; 1Q15 Office
Rent Growth Forecast

Source: CBRE Econometric Advisors; 1Q15 Office
Vacancy Rates

Source: CBRE Econometric Advisors; 1Q15 Office
Net Absorption

Top 10 Markets with Net Absorption Exceeding 400,000 sf in Q1 2015

Source: CBRE Econometric Advisors; 1Q15 Office

Among Q1 2015’s 10 best-performing markets (in terms of net absorption), the Midwest claims four, the Northeast and California two apiece, and for Texas and the West, one each.
Demand for CRE Loans

Net Percentage of Domestic Respondents Reporting Stronger Demand for Commercial Real Estate Loans

Source: Federal Reserve
Underwriting Standards for CRE Loans

Source: Federal Reserve
Improving the Measurement of CRE Credit Risk
First and foremost, why would a CRE borrower default on their debt obligations?

1. Cash flow from the property is inadequate to cover the scheduled debt service payment.

2. The underlying commercial properties, which serve as the secured collateral, are worth less than the amount of the loan.

If underwritten appropriately, in theory, CRE loans carry very little credit risk at origination. What drives the credit risk is the inherent future uncertainty – which potentially can be quantified.
Modeling default behavior should incorporate both CRE fundamentals and CRE market information

Starting with collateral
- Forecasting cash flow under various scenarios
- Property value influences default decision mostly during cash flow stress
- Macro and local market condition matters

Modeling default behavior
- Option A: Continue payment out of pocket, expecting market recovery
- Option B: Default on loan

Empirical Evidence
- Inability to reach consensus triggers credit events
- Borrowers are more likely to default in a recession than in an economic expansion
Data limitations and inconsistencies make quantifying CRE risk a challenge for many institutions

**Updated Property Information**
- Data captured at origination may not be complete for data analysis.
- Data management is important for historical and forward looking analysis

**Foresight into Market Fundamentals**
- Sound forecast that differentiates between property types and submarkets is important but unavailable

**Default history and modeling expertise**
- Default history over multiple credit cycles and from multiple sources is important for sound modeling and CRE data, but the history is not captured

**Intuition vs quantitative validation**
- Several qualitative factors can impact the analysis and risk measures and integrating quantitative models with intuition can be a challenge
- More than just data

**Assessing the impact of the economy**
- Different cities and neighborhoods react differently to an economic recession or expansion
A common approach is to blend empirically-derived risk measures with expert judgment.

**Example Quantitative Factors**
- DSCR
- LTV
- Market Vacancy Rate
- Market Condition (Origination)

**Example Qualitative Factors**
- Sponsor Experience
- Tenant Concentration
- Quality of Information
- Obligation & Recourse

**Quantitative Model**
- Quantitative PD%

**Qualitative Overlay**
- Qualitative Score (0-100)

**Final Output**
- Rating
- Rating-Implied PD

**Rating Scale**

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*Rating scale design and proper calibration are equally important!*

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It is important to be as objective as possible when assigning scorecard factors

Characteristics of Good Candidate Risk Factors

- Able to distinguish defaulters from non-defaulters (i.e., “action” in the underlying data sample)

- Clear, objective, and uniformly understood

- Capable of being assessed in a reasonable timeframe using accessible, consistently available data

- Possessing unique information value (i.e., non-duplicative, non-correlated)

- Supported by intuition and general business sense

- Measurable and verifiable (using historical data at some point in future)
3 Tethering Improved Risk Measurement to Business Activities
Dual risk ratings have become increasingly popular as a tool for measuring CRE risk

\[ EL = PD \times LGD \times EAD \]

Expected Loss  
Probability of Default  
Loss Given Default  
Exposure at Default

"Dual risk rating (DRR)"

Example:

When you make a loan, the amount of money the bank could potentially lose depends on these three things…

\[ \text{Expected Loss} = 3\% \times 30\text{¢ on the dollar} \times \$1\text{MM} \]

\[ = \text{Expected Loss} \]

\[ = \text{Probability of Default} \]

\[ = \text{Loss Given Default} \]

\[ = \text{Exposure at Default} \]
The concept of dual risk ratings is simple, but there are challenges institutions often face with implementation.

**Data Quality & Availability**
- What is the data quality?
  - Limited up to date data and ongoing availability
  - Data captured at origination may not be complete for ongoing data analysis
  - Data management is important for historical and forward looking analysis

**Standardized Processes**
- How to minimize errors?
  - Storing data in a single system of record for consistency
  - Improving operational controls by standardizing credit policies
  - Setting up workflow processes to ensure systematic loan origination processes

**Credit Risk Models**
- What are the most effective credit risk tools?
  - Improve credit origination decisions with accurate and predictive risk models
  - Leveraging risk models for capital allocation and reserve setting
  - Stress testing models that leverages baseline borrower risk

**Expert-based Risk Drivers**
- What other factors should be taken into consideration?
  - Seasoned experts add value to statistically-based ratings
  - Incorporate qualitative factors for a comprehensive analysis
  - Empower your credit experts to systematically document their opinion

**Monitoring & Governance**
- How to manage counter-party risk and model risk?
  - Rating systems must be shown to be appropriate for their intended purpose (validation)
  - They must also be maintained
  - Model recalibration can be difficult and costly

Moody’s Analytics

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CMM® (Commercial Mortgage Metrics) Product Overview

Sumit Grover, Product Manager – CRE Solutions
What is CMM (Commercial Mortgage Metrics)

» CMM is the leading analytical model for assessing credit risk in commercial real estate loans

» CMM offers:
  » State-of-the-art model
  » Built on extensive, proprietary dataset and calibrated to recent financial crisis
  » Flexible framework that allows clients to customize the models
  » Robust scenario analysis/stress testing capabilities that support regulatory compliance
  » Enterprise-class software
CMM capabilities at a glance

» Report risk measures at **portfolio and loan level**; also integrated with our spreading, loan origination and stress testing solutions

» Supports **back-testing** by allowing historical analysis on a portfolio

» Supports **regulatory stress testing**, by enabling you to generate risk measures under ECCA, supervisory scenarios and user-defined (organization specific) macroeconomic scenarios into CRE specific forecast and determine related losses on your portfolio

» Provides flexible framework that is **adjustable** to your default experience

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**Save your CRE portfolio on the Cloud and access from anywhere**

**Combine your CRE portfolio and macro forecast and instantly see the impact on risk measures**
Collateral forecasts and credit risk go hand-in-hand

Collateral Model

Property-level NOI and Value
- Systematic factors
- Idiosyncratic factors
Local CRE Market Info
- Volatility
- Current condition
- Forward-looking views
- Property Type, MSA/submarket

Credit Risk Model

Loan-level Characteristics
- DSCR
- LTV
- Market Vacancy
- Market Price Index Change
- Loan seasoning
- etc.

PD and LGD Drivers
Assessing Loan level risk: Understanding the driving factors in CRE

**Loan XYZ:**

- **Collateral:** Office building
- **Location:** New York, Midtown Manhattan
- **Originated:** 2nd Qtr, 2007
- **Origination LTV:** 55%
- **Origination DSCR:** 2.30
- **Loan Type:** Interest-only, 5-year bullet loan

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**Graphs and Tables:**

- Property Value and NOI charts with standard deviation and baseline comparisons.
- Table showing loan balance, loan debt service, NOI, value, DSCR, and LTV over 5 years.
- Cumulative Risk Measures table for EDF, LGD, EL, Unexpected Loss, Stress EDF, Stress LGD, and Stress EL.

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Moody's Analytics
Macroeconomic environment drives market environment

Macroeconomic Scenario

Translation Engine

National and Local Real-Estate Market Factors

CRE loans

Translation Engine

Forward-looking Volatility

Stressed Losses
Sample uses for CMM
Differentiate Markets with Relative Contributions

- CMM Provides a contribution for all factors impacting probability of default
- Understanding risk contributors can allow for quick comparison and distinguishing market factors vs. underwriting fundamentals
- All factors including DSCR, LTV, Origination Quality, Seasoning and market fundamentals are included
- Below is an example where we ran the same loan in two different markets:

Office, Albuquerque, NM (0.73%)  
Office, Chicago, IL (0.40%)
Risk Management – Buying/Selling/Portfolio monitoring

- CMM is built on a vast historical data and can help segment the portfolio for early warning on deteriorating debt
- CMM can help identify **risky mortgages** in a portfolio by segmenting the portfolio based on **property type** or the **location**

![Property Type Distribution (By Loan Balance)](image)

- Quarterly market data update on the underlying market conditions ensures you are always in the know
Integrating into Origination, Pricing, Capital Planning

• Ability to foresee property performance under various macroeconomic scenarios makes CMM an optimal tool to use and integrate into Origination process.

• CMM provides **Yield degradation** risk measure that can aid in pricing decisions.

• Expected Default Frequency, Loss Given Default, Exposure at Default, and Expected loss reported as results by CMM are actively used in Capital planning by various organizations.
Integrate with your analysis workbooks in Excel

» Get CMM results via Microsoft Excel Add-in

» Perform Scenario/What-if Analysis

» Build Business Specific Templates

  » Build templates that automatically update based on specific user inputs for loan/property

  » Incorporate any external factors and combine with CMM

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![Graph showing Annual EDF vs DSCR](image)
Questions

clientservices@moodys.com