Primatics CRE Modeling Webinar

Introducing Evolv’s Commercial Real Estate (CRE) Model

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Prescient Models
Primatics Financial - Overview

Primatics’ mission is to help banks and financial institutions evolve. We provide an enterprise-grade SaaS solution for accounting, valuation and compliance of loan portfolios

- We focus on loan portfolios – the core business of banks
- Our solution, Evolv, empowers banks’ users to comply with regulations, manage complexity and make better decisions
- We provide a SaaS (Software-as-a-Service) Solution with best-in-class security, flexibility and business scalability
- We currently have 50+ customers across all asset sizes, including over 15 Tier 1 ($10B+) financial institutions

- Performing and Non-performing GAAP Accounting
- Acquired Books
- Accounting Forecasting (CCAR, DFAST)
- Disclosures

- Reserving Process
- Loss Forecasting
- TDRs
- Loan Reviews

- Stress Testing (CCAR, DFAST)

CFO Dashboard

Custom Management Reports

Investor Relations Report

Disclosures

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Prescient Models - Overview

• Prescient Models is a leader in loan-level forecasting and stress testing technology with a global clientele.

• With an emphasis on predicting probabilities, not just rank-order scores, Prescient’s models address all aspects of the P&L, including loss forecasting, attrition / prepay, balance growth, revenue, and expenses.

• Prescient’s models create a uniform modeling connection from loan pricing through account management to economic capital.
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Overview of Evolv Platform
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Loan Data

Data Warehouses

Servicing Systems

Model Hosting Layer
Customer Models, Primatics Models

Technology Layer
SSAE16 Certified SaaS Platform

Model Execution Layer
Generate Loan Level, Period Level, Life of Loan Expected Cash Flows

New Business Layer
Allocate period level new loan originations by asset class & risk cohort

Business Intelligence Layer
Advanced analytical capabilities: attribution analysis, drill down capabilities, visualization

User Interface Layer
Model assumption and execution control, access to Business Intelligence Layer

End Users
Stress Testing
Risk Management
Forecasting
Disclosures

Loan Accounting
GAAP Accounting
Tax Accounting
GL Mapping

Technology Layer

User Interface Layer

End Users

Business Intelligence Layer

New Business Layer

Model Execution Layer

Model Hosting Layer

The Technology of Evolv’s CRE Model
Model Structure

- An expected loss structure (PD, EAD, LGD) plus attrition rates.
- All models are loan-level.
- Probability of Default (PD) and Loss Given Default (LGD) are modeled with an Age-Period-Cohort structure.
- “Age” is replaced with “Time to Maturity”. Maturity dates are dynamic, so “Age” will be negative and moving forward or backward depending upon changes in loan terms.

Monthly, loan-level performance data

- Lifecycle by property type
- Environmental impacts
- Loan score
Modeling Sequence

PD:

1. Create loan-level APC-style model with binomial distribution to produce a lifecycle function versus time-to-maturity and an environmental function versus calendar date.

2. Create model correlating the environmental function to macroeconomic factors. Use appropriate transforms and lags.

3. Create scoring model with GLM incorporating lifecycle and environment as fixed inputs. The “score” is actually a scenario-based, loan-level probability model.

• Repeat for LGD and Attrition.

• EAD is handled via simulation.
Product categories have different, though similar lifecycles. (Industrial, Multifamily, Office, Retail, and Other)

Risk of default rises dramatically as loans approach maturity without being extended.
The environment measures how many more (+) or fewer (-) defaults we observed as compared to the usual lifecycle. This measure captures both the 2009 recession and the previous 2001 recession as expected, with higher uncertainty in the past.
Macroeconomic Factors

Macroeconomic factors are correlated to the historically measured environment in order to extrapolate to the future.

After testing a wide range of measures, we found the following to be most predictive for PD and LGD:

- Commercial Property Price, 12-m change (log-ratio)
- Unemployment Rate, 12-m change (log ratio)
- Real GDP, 12-m change (log ratio)

The log-ratio is used rather than % change, because % change is asymmetric and skewed:

For percent-change transformations, +10% - 10% ≠ 0.
Macroeconomic Overlay

The resulting macroeconomic fit allows us to create forward-looking, scenario-based forecasts and stress tests.
Scoring Factors

Fixed from most recent observation:

- Property Type
- DSCR NCF (Ratio of net cash flow to debt service); current year, previous year, and two years prior
- Occupancy Fraction
- Property Status
- Property Condition
- Delinquency History

Factors that vary with the macroeconomic scenario

- Current LTV
- Current Note Rate
Out-of-sample Tests
Out-of-time Tests

ROC curves

Two year split of data

- Data from beginning through 2010. KS = 0.507. Gini = 0.63
- Data from 2011 through Feb 2013. KS = 0.51. Gini = 0.665
Applications of Evolv's CRE Model
Applications of Evolv’s CRE Model

The combination of Evolv and Prescient Models is very powerful, evidenced by the many applications and business uses of the CRE Model, including:

• Forecasting losses
• Forecasting gross interest income
• Generating NPVs
• Regulatory stress testing
• General stress testing/scenario analysis
• Generating results for accounting
• Challenger model
Q&A

• Send questions through chat to John Lankenau or through Q&A window
Contact

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