Economic Scenarios: A Glimpse Into the Future

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Trivia Time!
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Cristian conducts economic analysis and develops econometric models for a variety of projects. His regular analysis and commentary on consumer credit, housing and the broader economy appear on Economy.com. He is regularly quoted in publications such as the Wall Street Journal. Cristian has a PhD in economics from Johns Hopkins University and is named on two US patents for credit modeling techniques.

Timothy Daly
Director, Sales Manager of Economics and Consumer Credit Analytics
Tim leads Moody’s Analytics Economics and Consumer Credit Analytics sales group in the Americas. Tim and his team provide clients with off-the-shelf, regulatory, and customized stress scenarios, historical and forecast data, research and consumer credit models for risk management and regulatory needs. Tim has thirteen years of experience working with banks, asset management firms, insurance companies, corporations, real estate firms and regulators.
Tim holds a BA in Marketing from Fordham University and has been with Moody’s Analytics for 13 years.
Multiple Threats in the World Today

- INTEREST RATE CHANGES
- NATURAL DISASTERS
- HIGH OIL PRICES
- HOUSING BUSTS
- LOCAL SHOCKS
- MACRO SHOCKS

- BREXIT
- 137,000 jobs
- BANK REPO
- OPEN HOUSE

...
Agenda

1. Managing Risk in an Evolving Landscape
2. CECL: Accounting & Economics Intersect
3. What Makes a Good Forecast
4. Multiple Approaches
5. Recommendations and Use Cases
Managing Risk in an Evolving Landscape
Manage Risk with Scenario Analysis

Real GDP, % year over year

Available Scenarios

**Standard Driven**
- S1 Stronger Near-Term Rebound
- BL Baseline Forecast
- S2 Slower Near-Term Recovery
- S3 Moderate Recession
- S4 Protracted Slump
- S5 Below-Trend Long-Term Growth
- S6 Stagflation
- S7 Next-Cycle Recession (US Only)
- S8 Low Oil Price
- CS Constant Severity
- CB Consensus Baseline (US Only)

**Compliance Driven**
- FB Fed Baseline
- FA Fed Adverse
- FS Severely Adverse Scenario
- BC Bank Specific Scenario
Moody’s Analytics Scenarios
Reasonable and supportable forecasts from Moody’s Analytics.

Key Features

» 30-year horizon, for baseline forecast plus eight alternative scenarios
» Available for the US, all state and metro areas, as well as 60+ countries
» Coverage of more than 1,800 economic, financial and demographic variables
» Forecasts updated monthly, history updated in real-time
» Fully documented model methodology; scenario assumptions published monthly
» Backtesting, tracking and model validation reports available
CECL: Accounting & Economics Intersect
Accounting and Economics Intersect

May have a large impact on capital and availability of credit

Institutions will need to immediately measure and record all expected credit losses (ECL) over the life of their financial assets based on:

» Past events, including historical experience

» Current conditions

» Reasonable and supportable forecasts
“Reasonable and Supportable” Forecasts

Appears 39 times in Topic 326. Possible interpretations:

Credit Loss Estimates

» Is the length of observed historical performance sufficient to project losses?

» Is observed history of performance relevant for the future time horizon?

» Is the methodology used reasonable and supportable over the time horizon?

Economic Forecasts

» Are forecasts for forward-looking drivers econometrically determined?

» Are data with limited history being extrapolated?

» Are economic cycles being forecasted in a reasonable fashion?

Both matter!
Trivia Time!
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What Makes a Good Forecast?
What Makes A Good Economic Forecast?

Key considerations.

- Based on **sound**, generally accepted economic and statistical theory
- Incorporates inter-relationships and feedback effects among variables such that a shock to one factor impacts all other factors over time
- Provide information at varying **levels of geographic aggregation** to capture **local economic effects**.

**Our economic forecasting model meets these criteria!**
Macro to Regional Linkages
Interrelationships between all key variables

US MACRO MODEL

Population/Households → Cost of Doing Business → Output by Industry

Housing ← Cost of Doing Business ← Output by Industry ← Personal Income

Employment by Industry

Labor Force/Unemployment

Consumer Credit Quality
Multiple Approaches
How Many Scenarios Do You Need?
Leverage percentile distributions using multiple scenarios.

» No specific guidance – at least one forward look
  – Could interpret as Baseline or Consensus scenario

» IFRS9 analogue to CECL
  – Multiple, probability-weighted scenarios

» Measure loss under multiple scenarios
  – Generate a distribution

» Distribution of losses is skewed
  – “Average” economic forecast won’t generate the “average” level of losses
  – Multiple scenarios approximate the distribution
Consensus Unemployment Forecasts

Unemployment Rate, %

Sources: BLS, Moody's Analytics
Loss Forecasts Under Consensus

Loss Rate, %

Sources: BEA, Moody's Analytics
Probability Weighting Loss Forecasts

Loss Rate, %

Months on Book (Age)

Sources: BEA, Moody's Analytics
Loss Forecasts with Probability Weighting

Loss Rate, %

Sources: BEA, Moody's Analytics
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Recommendations and Use Cases
Recommendations
Different approaches for different situations.

1. **For the largest institutions:**
   - Multiple custom economic scenarios provides a wide range of estimates.
   - Estimates less sensitive to decisions on forecast period and mean reversion.
   - Multiple scenarios reduce volatility in quarter-to-quarter updates.

2. **For midsize institutions:**
   - Standardized economic forecasts provide a reasonable solution.
   - Multiple, risk-weighted scenarios provide a quantitative, defensible approach.
   - Multiple scenarios reduce volatility in quarter-to-quarter updates.

3. **For smaller institutions:**
   - A single scenario approach is reasonable.
   - “Reasonable and supportable” forecast horizon at 2-3 years with gradual reversion.
   - Run periodic sensitivity analysis to disclose potential volatility/risks to the forecast.
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# Selected Case Studies

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<th>INSTITUTION</th>
<th>OVERVIEW</th>
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<tr>
<td>Large Multi-national GSIB (Asset Size = $386B)</td>
<td>» Produced stressed BHC scenario based on counterparty default and 3 Fed scenarios through a network of ~1000 macroeconomic and global financial market factors.  &lt;br&gt; » Footprint: International, Market Risk, U.S. subnational specialty</td>
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<td>CCAR Bank (Asset Size = $180B)</td>
<td>» Met with C suite to assess clients risk profile including C&amp;I concentrations and retail mix. Proposed three idiosyncratic scenarios for their CCAR submission (ex. Yield curve inverts, Fed tightens monetary policy too soon, Nuclear reactor accident)  &lt;br&gt; » Footprint: US and select States</td>
</tr>
<tr>
<td>Merchant Services (Asset Size = $33B)</td>
<td>» Partnered with client’s Risk management team to build IFRS 9 compliant models for all of their portfolios and provided access to our probability-weighted scenarios for use in the models. CECL Modeling to start in 2018.  &lt;br&gt; » Footprint: US, select States and Metros, International</td>
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<tr>
<td>Captive Finance (Asset Size = $180B)</td>
<td>» Assisted with scenario and model development for IFRS9 providing access to off-the-shelf scenarios and built IFRS9 compliant model for Auto Loan portfolio  &lt;br&gt; » Footprint: Canada, select Provinces and Metros in Canada</td>
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<tr>
<td>DFAST Bank (Asset Size = $26B)</td>
<td>» Partnering with client’s CECL working group and stress test team to provide off-the-shelf scenarios highlighting key risks in CRE, C&amp;I, and mortgages.  &lt;br&gt; » Footprint: US, select States and Metros in the Midwest</td>
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Moody’s Analytics CECL Solution Suite

- Top-down and granular CECL compliant credit risk models
- Off-the-shelf or customizable models to reflect bank’s own experience

PROCESS AUTOMATION
- Data ingestion and storage
- Integrated ECL modeling and qualitative overlays
- Management analysis and reporting

Data
- Comprehensive credit risk data across asset classes to support benchmarking, validation and modeling
- Bank peer benchmarking data

Economic Scenarios
- Standard and custom economic forecasts and supporting narratives
- Scenario probabilities to support multi-scenario analysis

Advisory
- Quantitative Impact analysis
- Model gap assessment
- CECL framework design and implementation
- Custom credit risk modeling