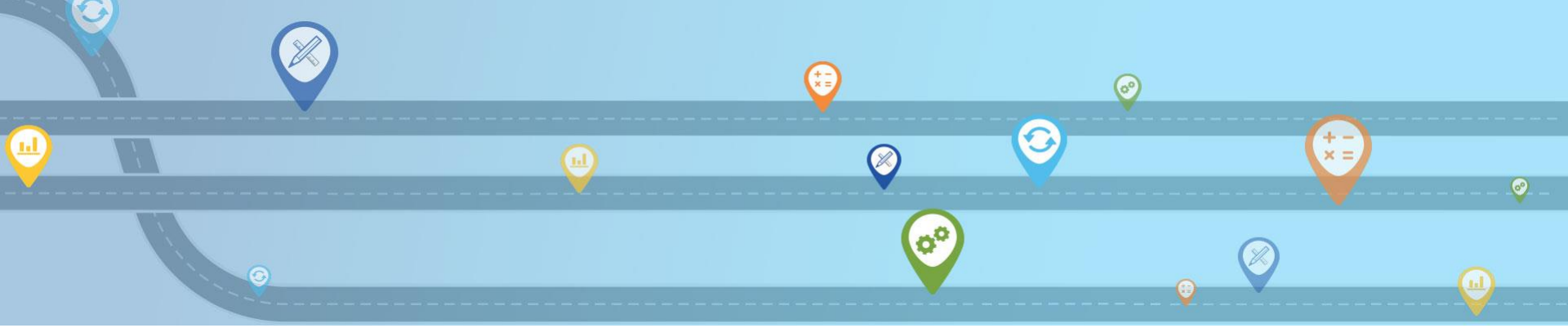
Moody's Analytics

CECL Webinar Series:
The Roadmap to Success

Cristian deRitis PhD, Sr. Director, Economics

SEPTEMBER 2017



Moody's Analytics CECL Webinar Series:

The Roadmap to Success

Today:

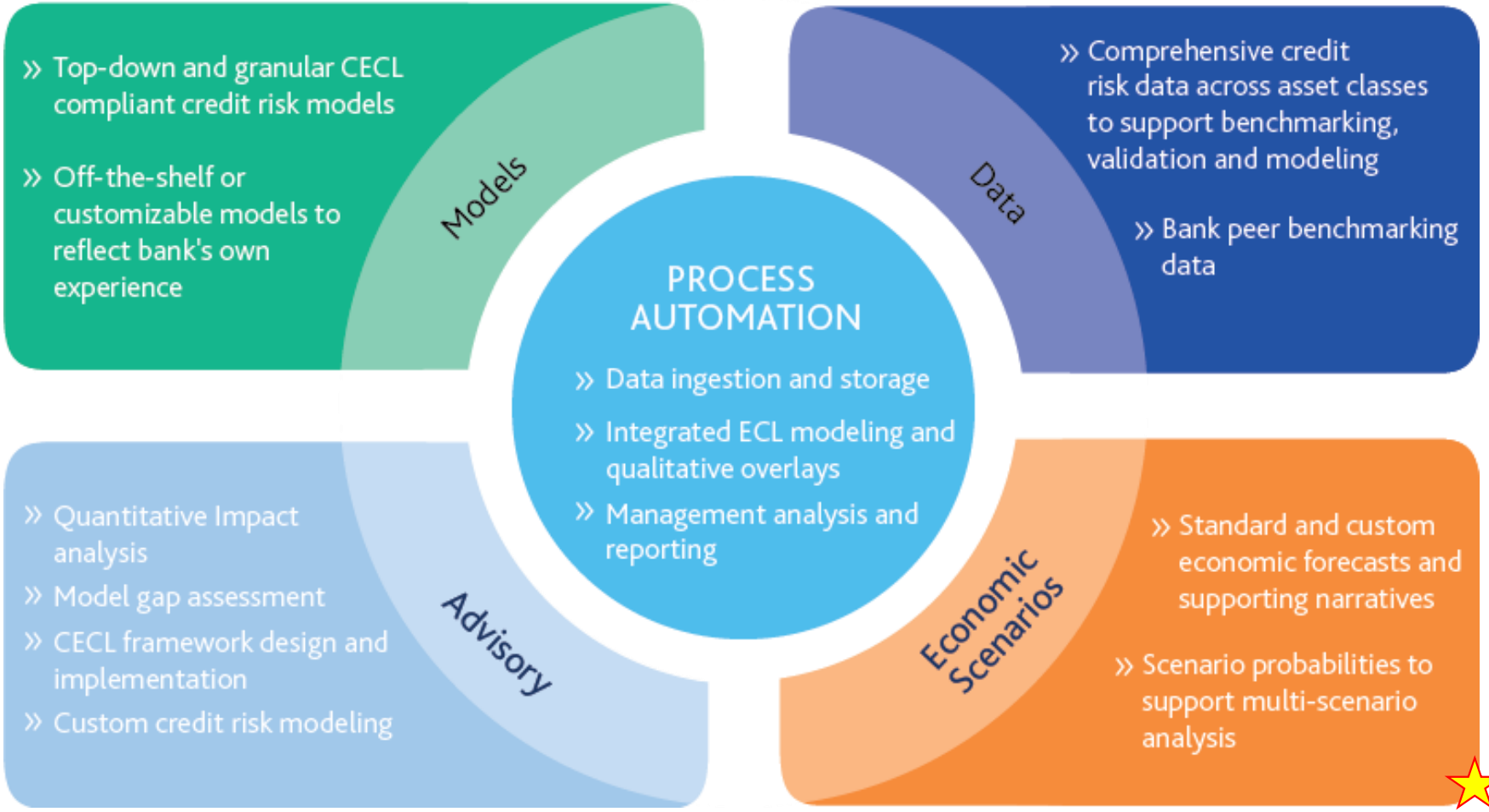
Economic Scenarios for CECL: What's Reasonable and Supportable?

COMING UP

Empowering Users, Satisfying Auditors | Thursday, October 5

Moody's Analytics CECL Solution Suite

Today's Focus is on Economic Scenarios



Presenters

Speaker

Dr. Cristian deRitis
Senior Director, Consumer Credit Analytics

Cristian is a senior director who 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.

Moderator

Anna Krayn
Senior Director, Head of Regulatory & Accounting Solutions

Anna is a senior director who manages the regulatory and accounting solutions team in the Americas. The team is responsible for solutions structuring, leveraging Moody's Analytics products and services focusing on impairment, stress testing, and capital planning solutions. Her primary focus is on financial institutions.

Accounting and Economics Intersect

"Incurred loss" model replaced with forward-looking projections

- Institutions will need to measure and record immediately all current expected credit losses (CECL) over the life of their financial assets based on:
  - Past events, including historical experience
  - Current conditions
  - ✱ Reasonable and supportable forecasts

- Could have a large impact on capital and availability of credit.

Goes into effect starting in 2020

R&S Forward Looking Scenarios

6 considerations for using economic scenarios for CECL

1. FASB Requirements
2. Economic forecast methodology
3. Forecast horizon
4. Number of scenarios
5. Mean reversion
6. Firm-specific scenarios

1

FASB Requirements

FASB Requirements

"The measurement of expected credit losses is based on relevant information about past events, including historical experience, current conditions, and ***reasonable and supportable*** *forecasts that affect the collectability of the reported amount. An entity must use judgment in determining the relevant information and estimation methods that are appropriate in its circumstances."*

Amendments allow an entity to ***revert to historical loss information*** *that is reflective of the contractual term (considering the effect of prepayments)* ***for periods that are beyond the time frame for which the entity is able to develop reasonable and supportable forecasts****."*

Source: Page 3, Financial Instruments—Credit Losses (Topic 326), FASB, No. 2016-13, June 2016

“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

Focus is on Economic Forecasts today.

2 Economic Forecast Methodology

Economic Forecast Model Methodology

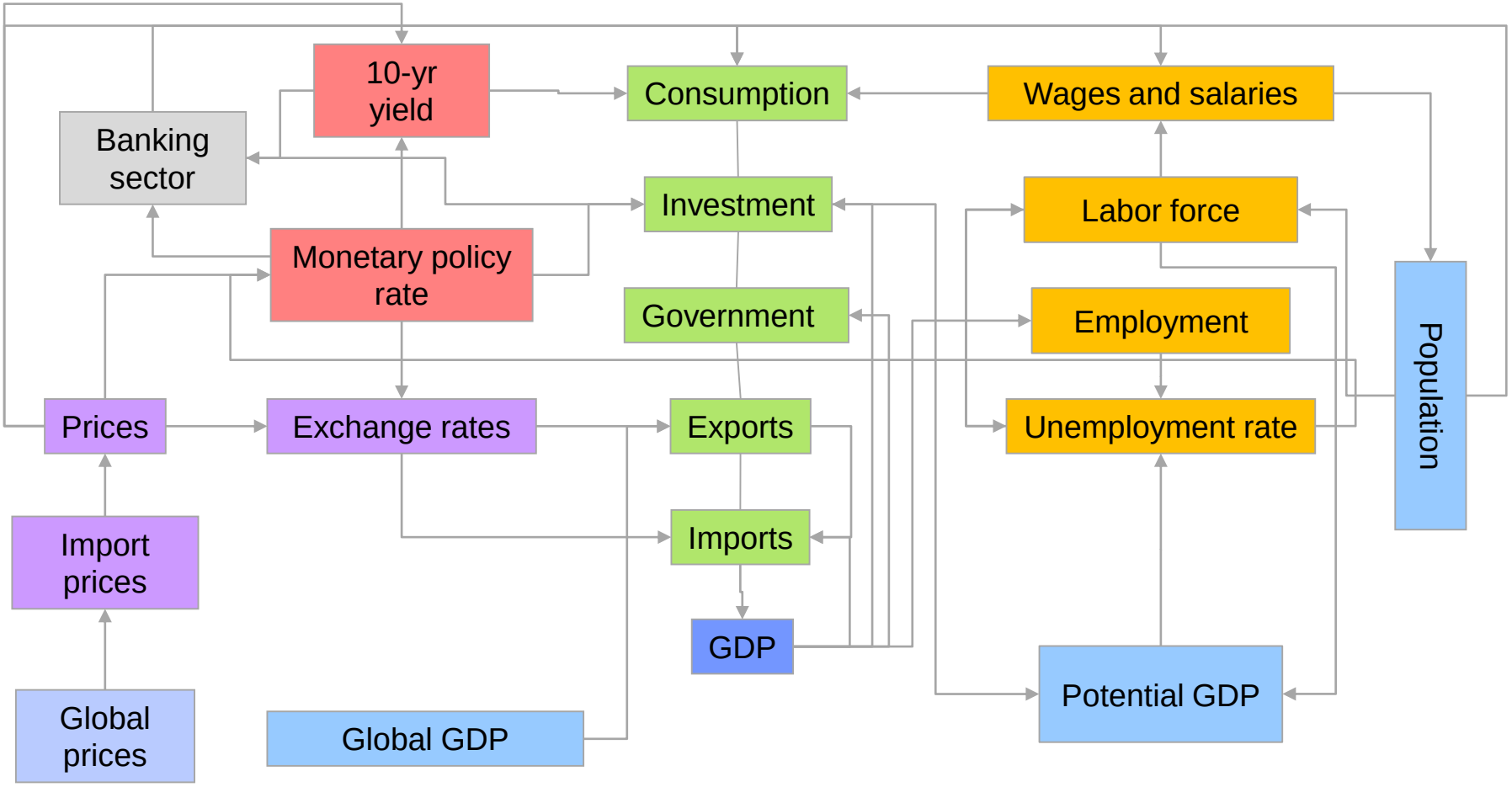
- ✓ The model should be based on sound, generally accepted economic and statistical theory
- ✓ The model should incorporate inter-relationships and feedback effects among economic variables
  - Shock to one factor (e.g. interest rates) impacts all other factors (e.g. employment) over time
- ✓ The model should provide information at varying levels of geographic aggregation to capture local economic effects.

The Moody's Analytics Economic Forecasting Model meets these criteria.

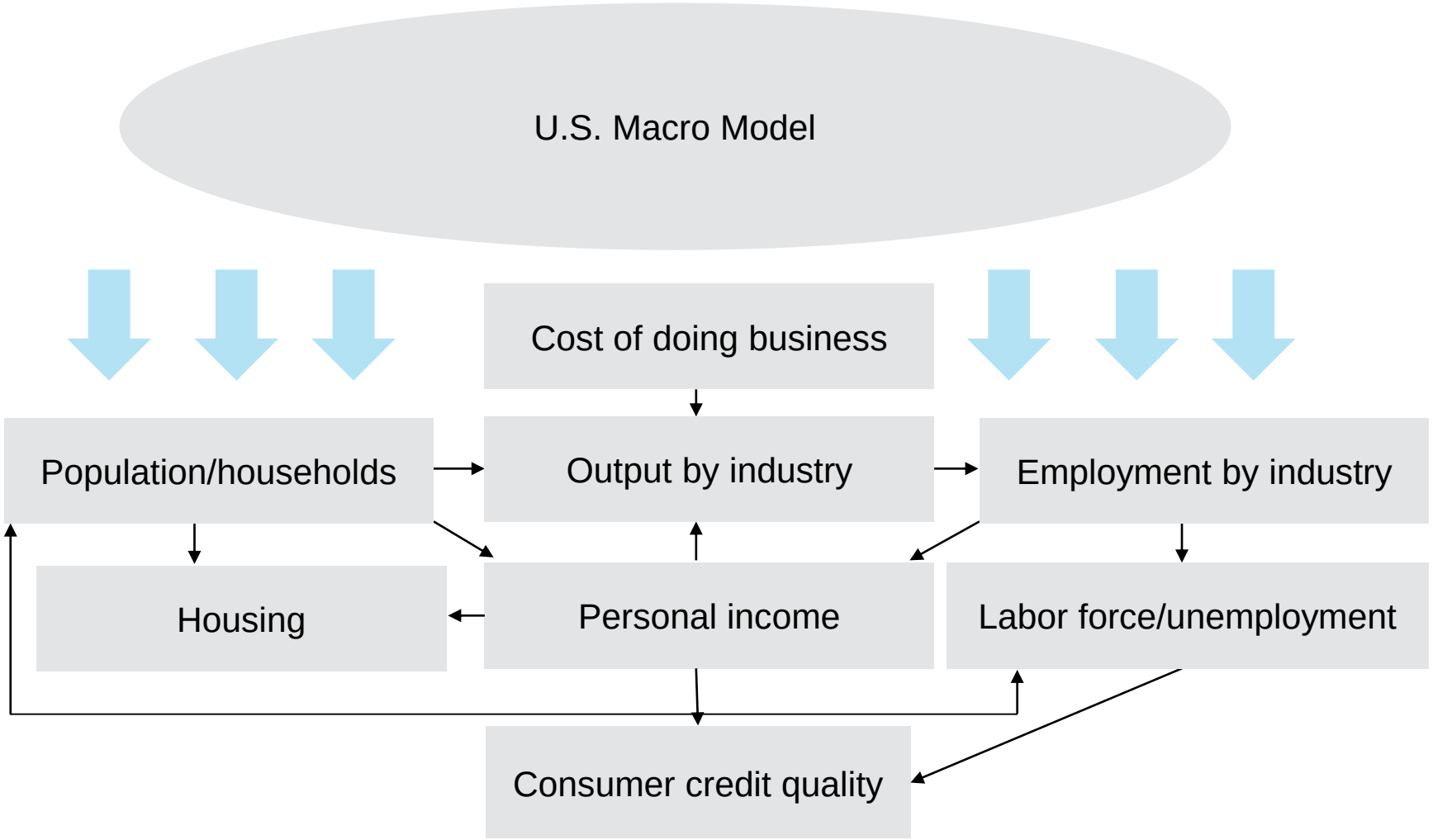
Moody's Analytics Forecasting Model

- Uses all available history covering many economic cycles
  - Monthly unemployment rate back to 1948
- Relies on established forecasting methods
  - Structural macroeconomic model by Nobel laureate Lawrence Klein
  - Technique used by Federal Reserve, IMF, and central banks
- Regular back-testing, tracking, and model validation

Structural Economic Forecasting Model

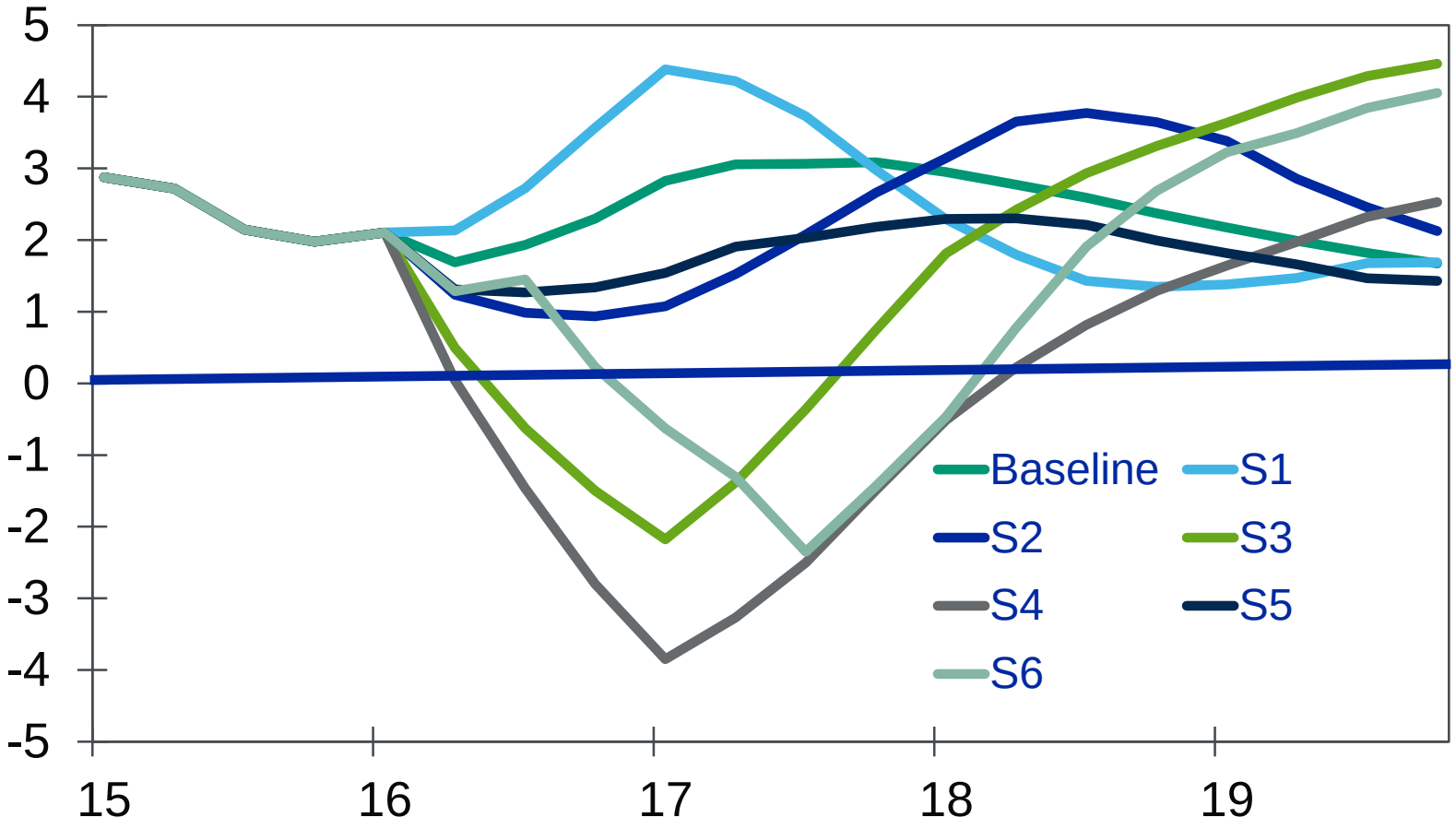


Macroeconomic to Regional Linkages



Model Produces Multiple Scenarios

Real GDP, % year over year



Sources: BEA, Moody's Analytics

A Full Set of Scenarios

Standard

BL Moody's Analytics Baseline

CBL Consensus Baseline (US Only)

Alternatives

S1 Stronger Near-Term Rebound

S2 Slower Near-Term Recovery

S3 Moderate Recession

S4 Protracted Slump

S5 Below Trend Long Term Growth

S6 Stagflation

S7 Next-Cycle Recession

S8 Low Oil Price

*Idiosyncratic and expanded CCAR scenarios also available.

3 Forecast Horizon

Forecast Horizon

- Every model has forecast errors
  - Understand limitations of all forecasting models
  - Forecast errors grow over time due to uncertainty
  - Economy is exposed to exogenous external shocks
    - Difficult to predict
- Moody's Analytics economic forecasts return to long-term trend over period of 2 to 4 years

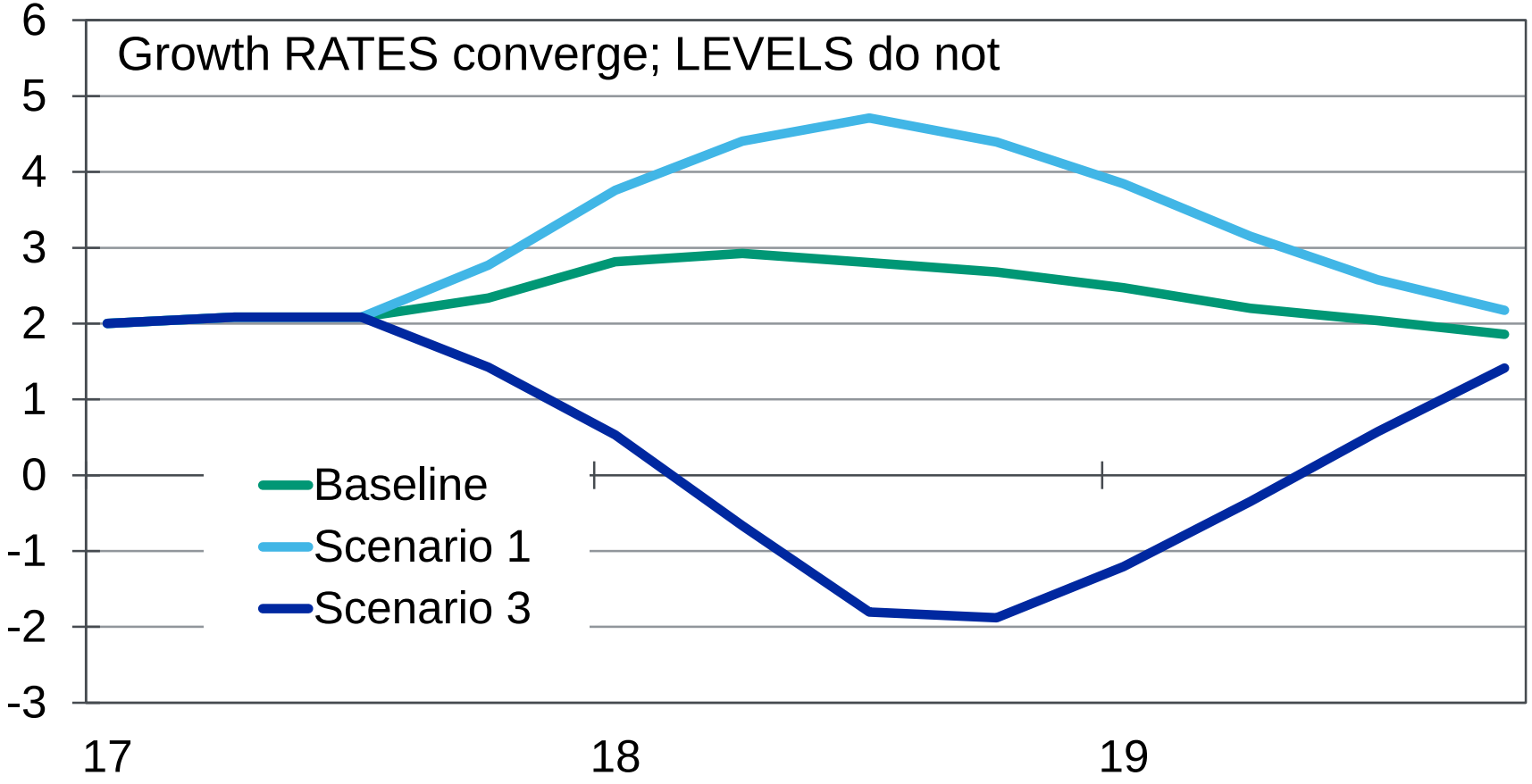
Simple Time Series Model (ARIMA)

Real GDP growth rate, % year over year

Sources: Moody's Analytics

Scenarios Converge To Trend

Real GDP growth rate, % year over year



Sources: BEA, Moody's Analytics

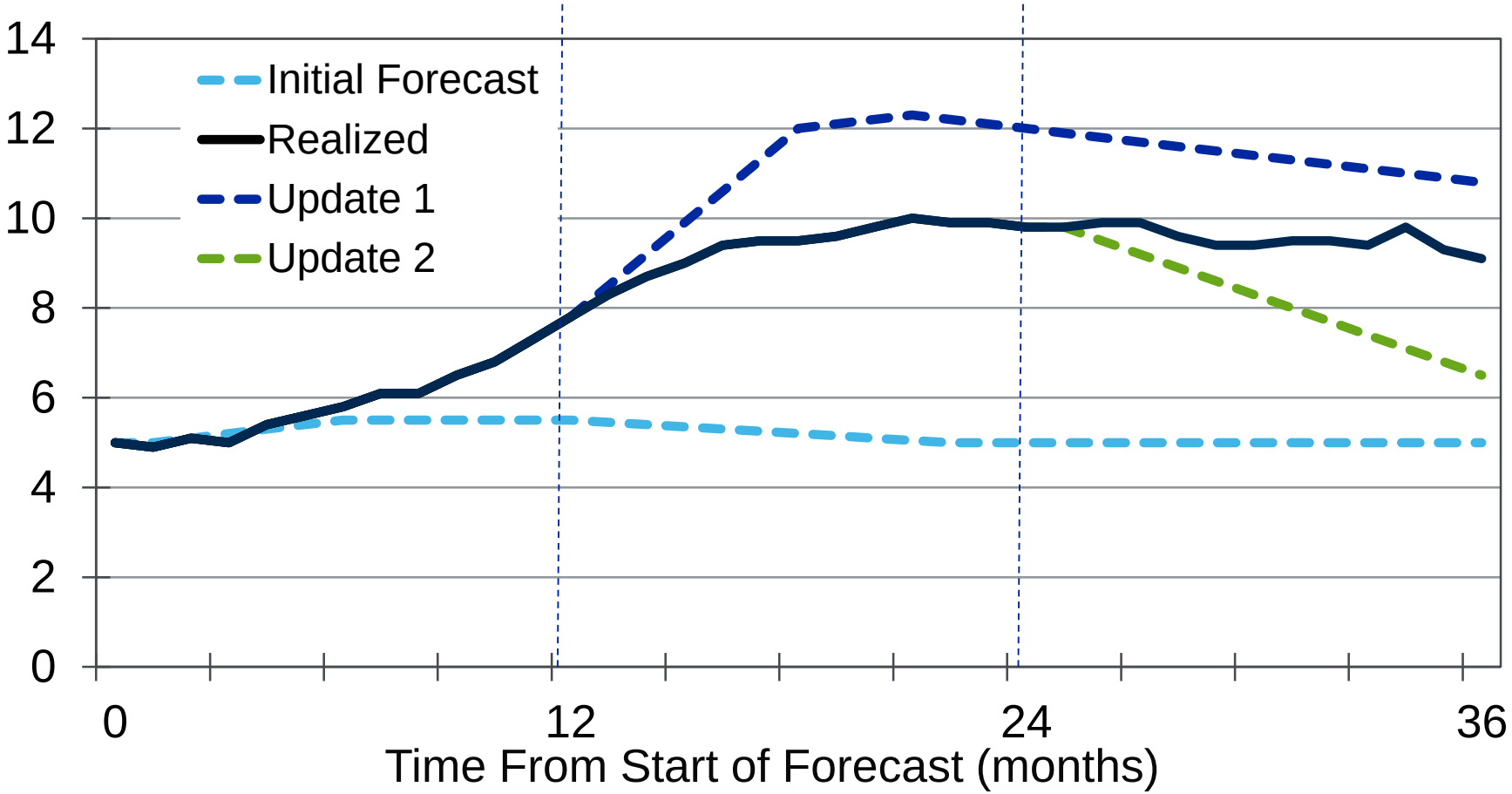
4 Number of Scenarios

Number of Scenarios

- No specific guidance from FASB
  - Future economic conditions have to be incorporated, no prescriptive approach
  - Single scenario may be sufficient: Baseline or Consensus scenario
- IFRS9 – international accounting analogue to CECL – requires multiple, probability-weighted scenarios
- Best practice in risk management is to measure loss under multiple scenarios to generate a distribution
- Distribution of losses is skewed
  - The “average” economic forecast won’t generate the “average” level of losses
  - Multiple scenarios approximate the distribution

Consensus Unemployment Forecasts

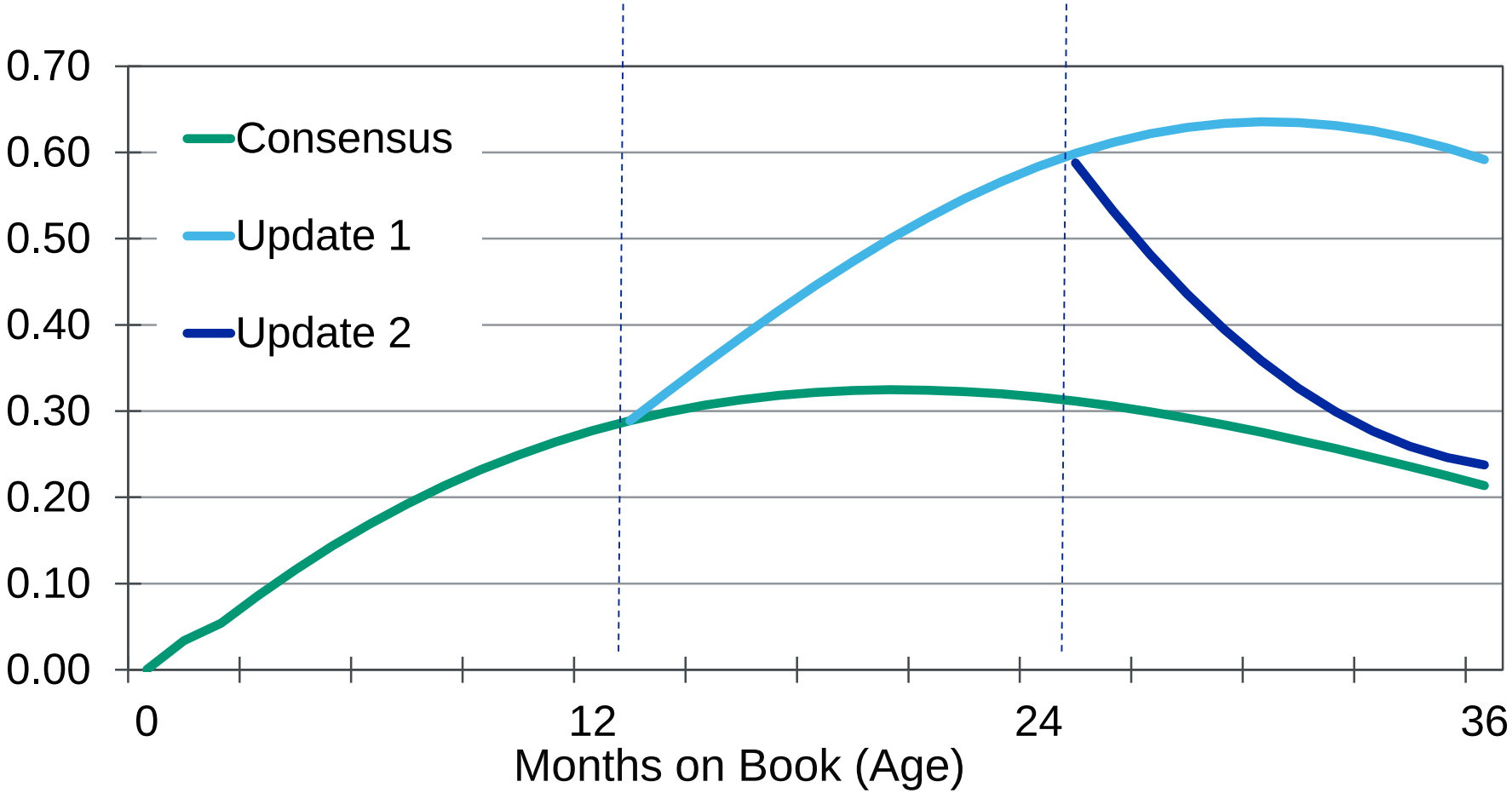
Unemployment Rate, %



Sources: BLS, Moody's Analytics

Loss Forecasts Under Consensus

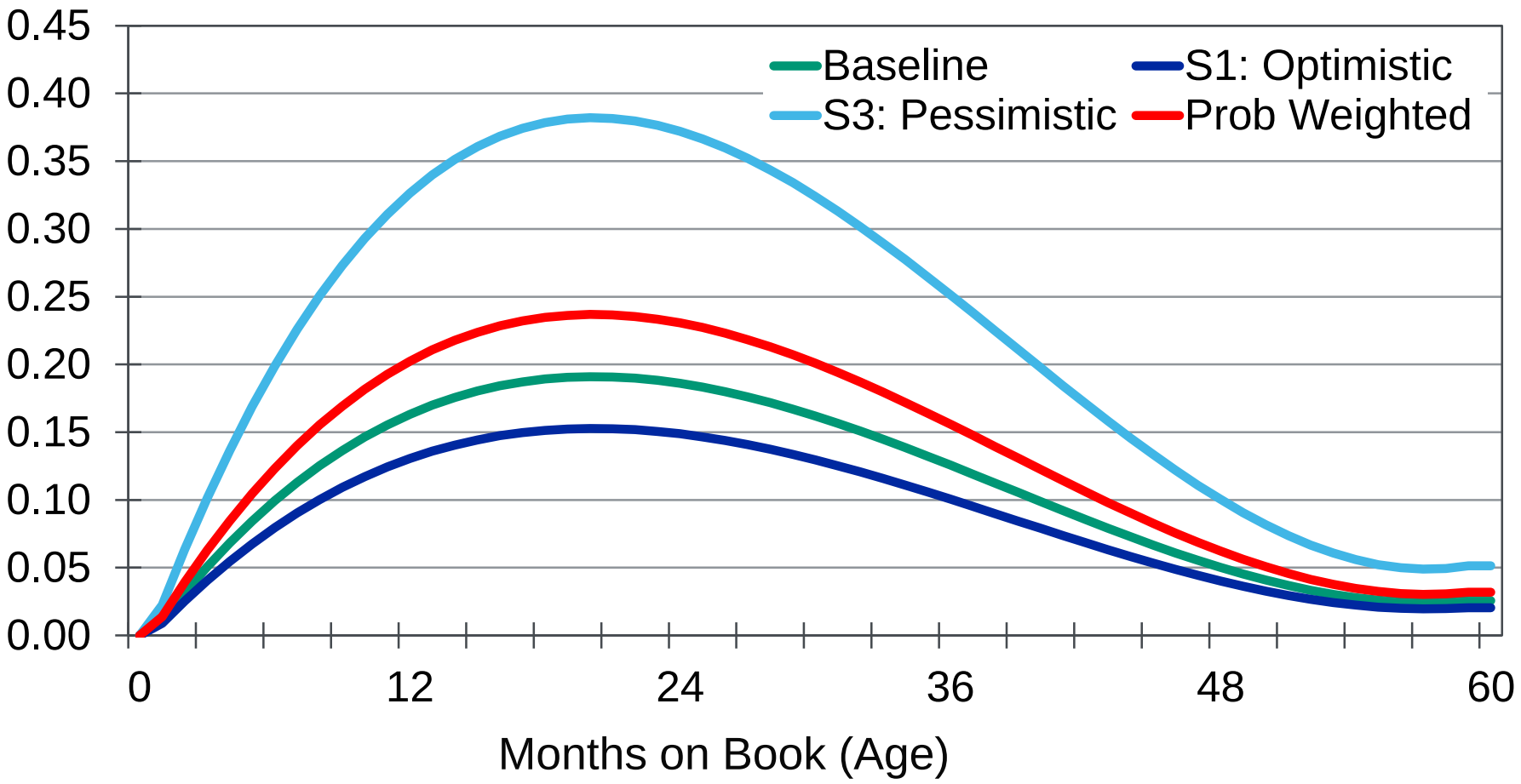
Loss Rate, %



Sources: BEA, Moody's Analytics

Probability Weighting Loss Forecasts

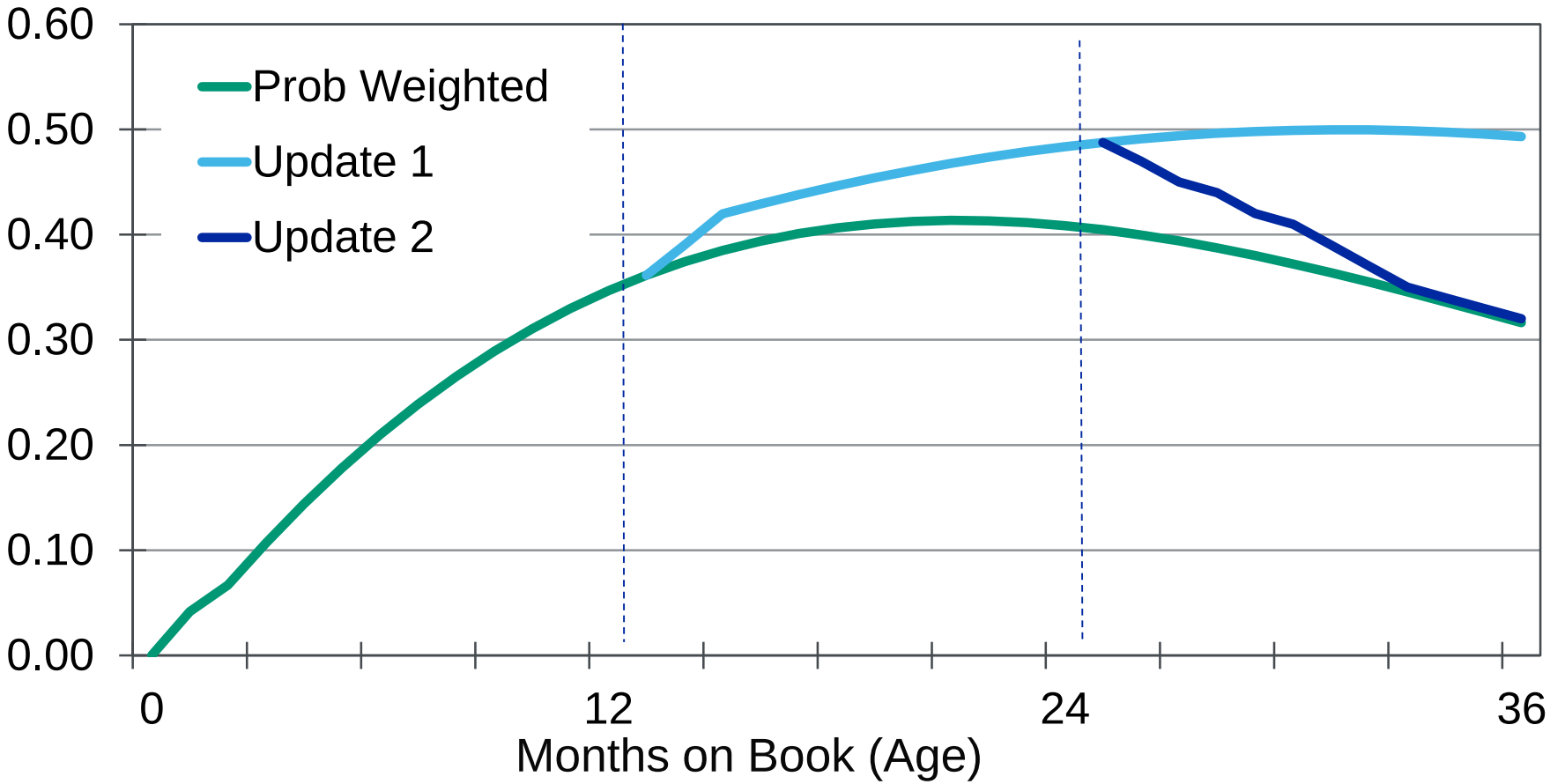
Loss Rate, %



Sources: BEA, Moody's Analytics

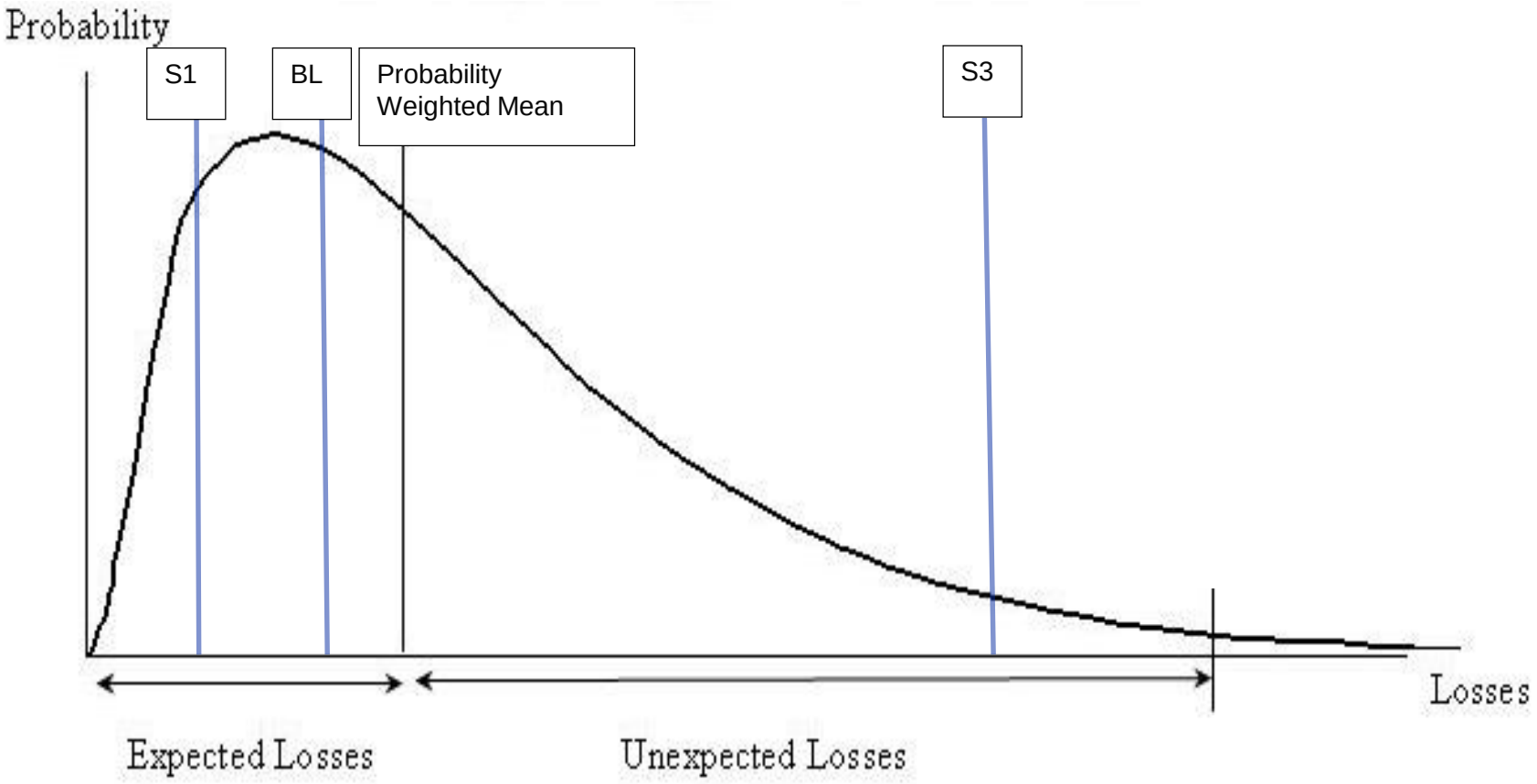
Loss Forecasts with Prob Weighting

Loss Rate, %



Sources: BEA, Moody's Analytics

Loss Distributions Are Skewed



Sources: Moody's Analytics

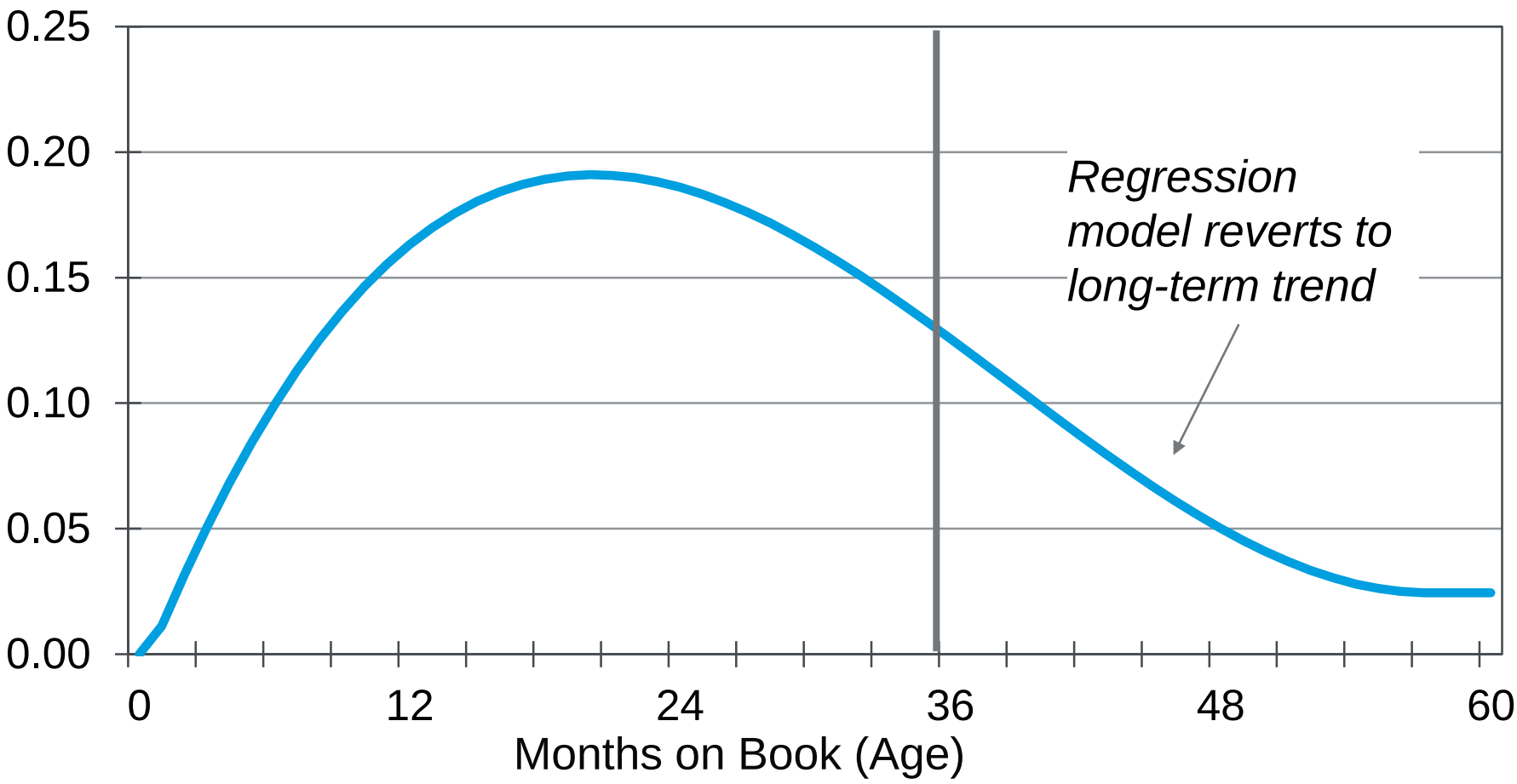
5

Mean Reversion

Mean Reversion

- Guidance directs institutions to "***revert to historical loss information***" after reasonable and supportable forecast period.
- Open for interpretation
- What is this requirement really addressing?
  - Forecast uncertainty.
- **Options**
  - **Option 0:** No need to revert **externally** if the loss forecasting model already has reversion built into it
  - **Option 1**: Revert to historical loss rates **immediately** after the determined forecast horizon
  - **Option 2**: Revert to historical loss rates **gradually** after the determined forecast horizon

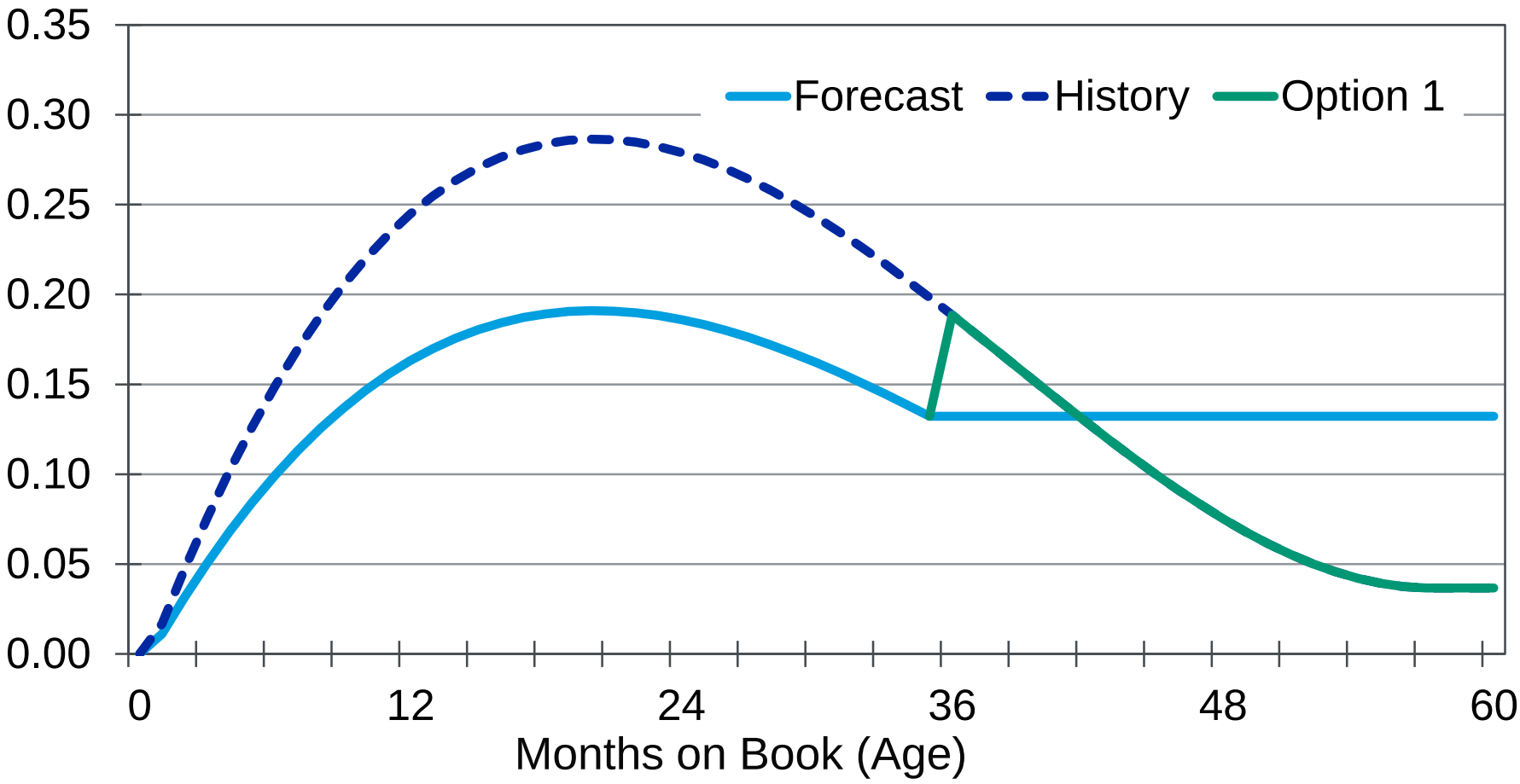
Mean Reversion Option 0



Sources: BEA, Moody's Analytics

Mean Reversion Option 1

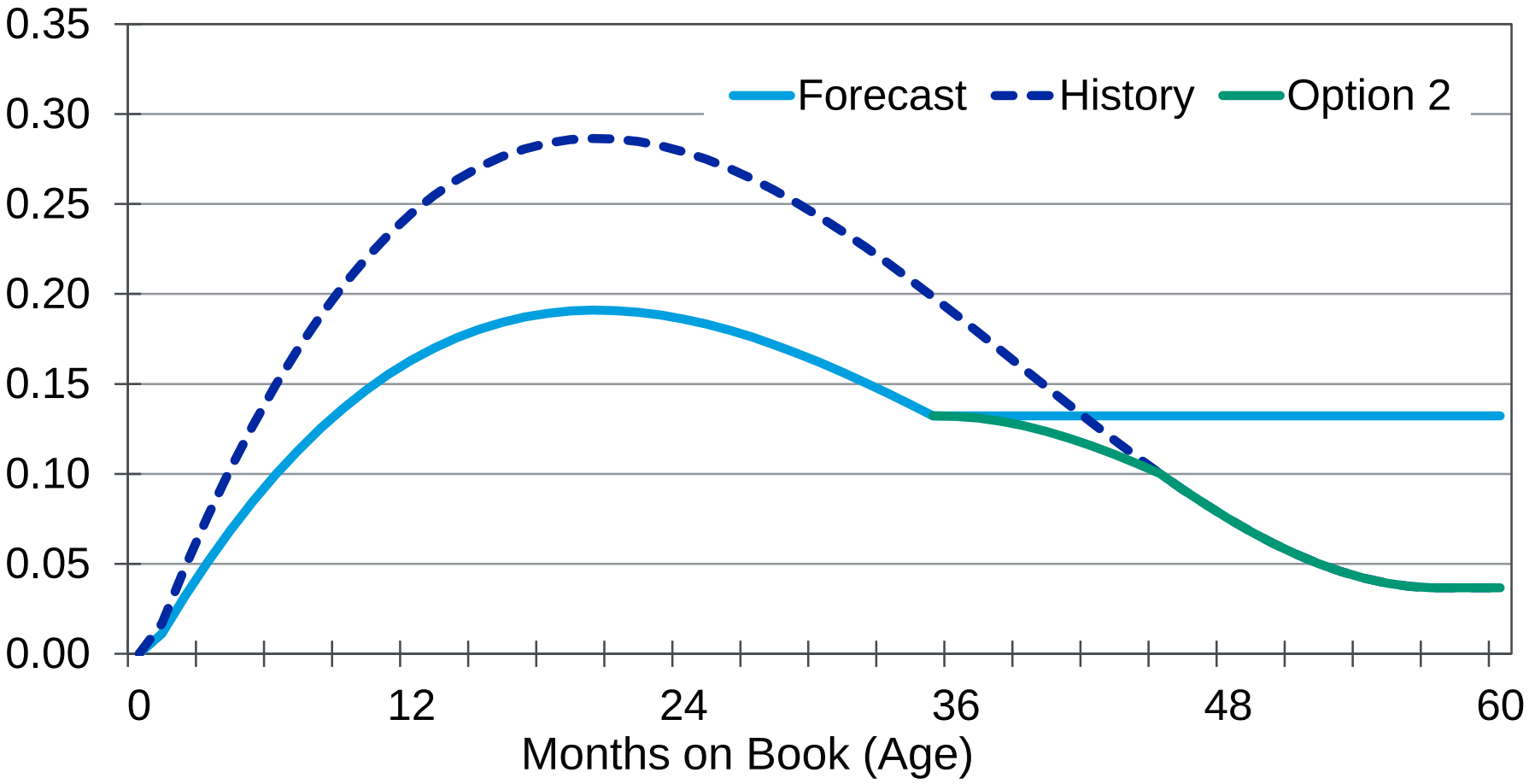
Loss Rate, %



Sources: BEA, Moody's Analytics

Mean Reversion Option 2

Loss Rate, %



Sources: BEA, Moody's Analytics

6 Firm-Specific Scenarios

Firm-Specific Scenarios

- Standard forecast scenarios sufficient for most institutions
- Others will want idiosyncratic scenarios to capture unique risks
  - Midwestern regional bank with exposure to agricultural machine manufacturers and their employees
  - Emphasize forecast values for crop prices in scenarios
- With commercially available macroeconomic models, institutions can specify outlook for specific economic factors.
  - Model solves for other factors to generate consistent forecasts
- Economic model insures forecasts are reasonable and supportable.
- Probability weights determined through simulation

Summary of Recommendations

For the largest institutions,

- Multiple firm-specific economic scenarios provides a wide range of estimates that can be weighted to derive the loss allowance calculation for CECL.
- Credit loss models forecast losses over behavioral life of loans in the portfolio making estimates less sensitive to explicit decisions around the reasonable forecast period and mean reversion method.
- Multiple scenarios reduce volatility in quarter-to-quarter updates.

Summary of Recommendations

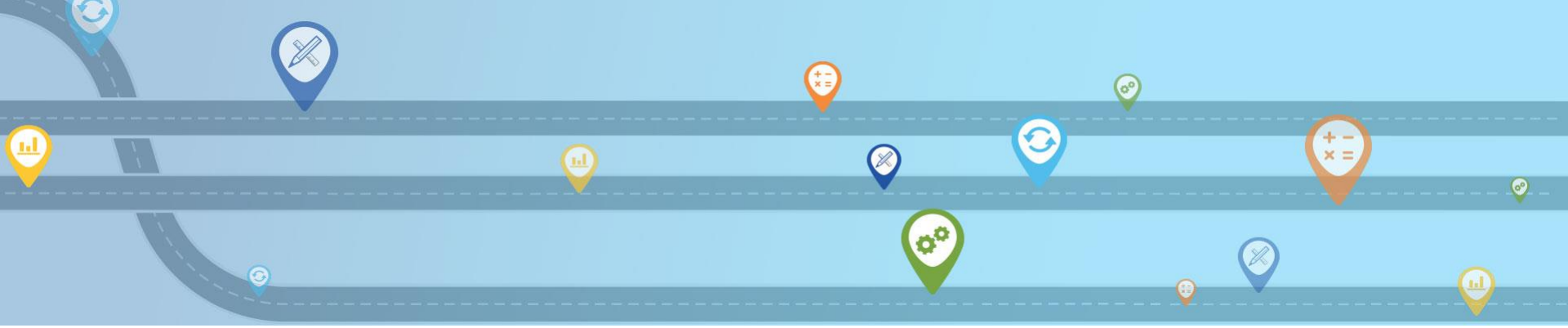
For midsize institutions with smaller and/or less complicated portfolios,

- Standardized economic forecasts provide a reasonable solution.
- Running loss forecasts along multiple scenarios and then weighting them provides a quantitative, defensible approach
- Multiple scenarios reduce volatility in quarter-to-quarter updates.

Summary of Recommendations

For institutions with small portfolios or that lack the capability to run multiple loss forecasts efficiently,

- Single scenario approach is reasonable.
- Set the “reasonable and supportable” forecast horizon at either 2 or 3 years with gradual reversion to average historical losses over a period of 6-12 months.
- Run periodic sensitivity analysis to disclose potential volatility/risks to the forecast.



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UPCOMING SESSION

Thursday, October 5 **Empowering Users, Satisfying Auditors**

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WWW.MOODYSANALYTICS.COM/CECL

Moody's Analytics

RFPC 17

Risk & Finance Practitioner Conference 2017

Theme: The Rise of Risktech

OCTOBER 22 – 24 | FAIRMONT SCOTTSDALE PRINCESS | SCOTTSDALE, ARIZONA

www.moodysanalytics.com/rfpc17

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