Interest Rate Risk: Designing a Comprehensive and Concise IRR Program
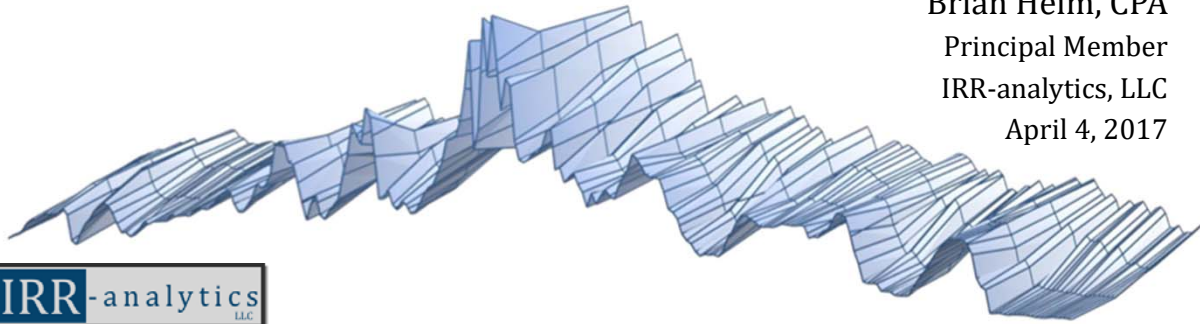
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Interest Rate Risk: Designing a Comprehensive and Concise IRR Program

- Comprehensive – Captures a range of exposures, meets regulatory expectations, and provides useful information

- Concise – Communicates effectively without causing information overload

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Standard IRR Measurements

- GAP
- Earnings simulations (EaR)
- Economic value of equity (EVE)
- Stochastic modeling

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Assumptions

- Key model assumptions (in order): Beta, decay, and prepayments
- Should be based on actual quantitative historical analysis with qualitative adjustments
- Should be formally reviewed annually and updated, if necessary
  - Less often: Not meeting regulatory expectations
  - More often: Noise in trend data

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Assumptions (continued)

- Documentation for key model assumptions should support and explain model assumptions and any changes/updates (memos)
- Offering and discount rates: Should be based on observable data points and updated as they change; not as important to include ALCO in updates, but ALCO should determine methodology
- Assumptions are very important; however, there are modeling techniques that reduce their significance, which will be discussed in later slides

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Policy

- Most banks have policy limits for 12M EaR, 24M EaR, and EVE
- GAP has slowly been written out of policies, but it is often still distributed to ALCO
- Banks with high levels of <u>rate sensitive</u> noninterest income must focus on net income rather than just net <u>interest</u> income
  - Mortgage operations: Refinance activity
- Limits should be based on earnings and capital levels
  - Do the math: Pretax earnings / net interest income
                              Regulatory capital cushion / regulatory capital*

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Policy (continued)

- Most banks use parallel rate shifts for policy measurements, but nonparallel/flattening acceptable and may be more realistic
- Most banks use instantaneous rate shocks for policy measurements, but some use ramped and others use both (additional exposure to ramped?)
- Policy should briefly discuss reporting requirements, including standard monitoring, nonparallel shifts, backtesting, sensitivity testing, and independent review

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Policy (continued)

- Policy should address requirements for policy violations
- Guidance requires at least quarterly monitoring of policy limits
- Dashboard report with trends and policy compliance a best practice
  - Best dashboard reports indicate violations with color or "yes/no" toggle
  - Strong practice to have early warning indicators and hard limits
  - Sample dashboard reports available

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Nonparallel Rate Shifts

- Banks should measure nonparallel rate shifts at least annually
- Rising/flattening, rising/steepening, falling/flattening, falling/steepening, twist
- What is the most unfavorable shift?
- If additional risk is identified compared to the standard measurements, then nonparallel rate shifts should be monitored more frequently
- Output should be compared directly to standard measurements

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Sensitivity Testing

- Banks should conduct sensitivity testing at least annually
- Should reflect stressed adverse customer behavior
- In current rate environment (exposure to rising rates), scenarios might include 2x betas, halved decay terms, or 0% prepayment rates
- This analysis helps determine the impact of assumptions, <u>establish a range of IRR exposures</u>, and defend the use of certain assumptions
- Output should be compared directly to standard measurements

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YEAR ONE EARNINGS SIMULATION
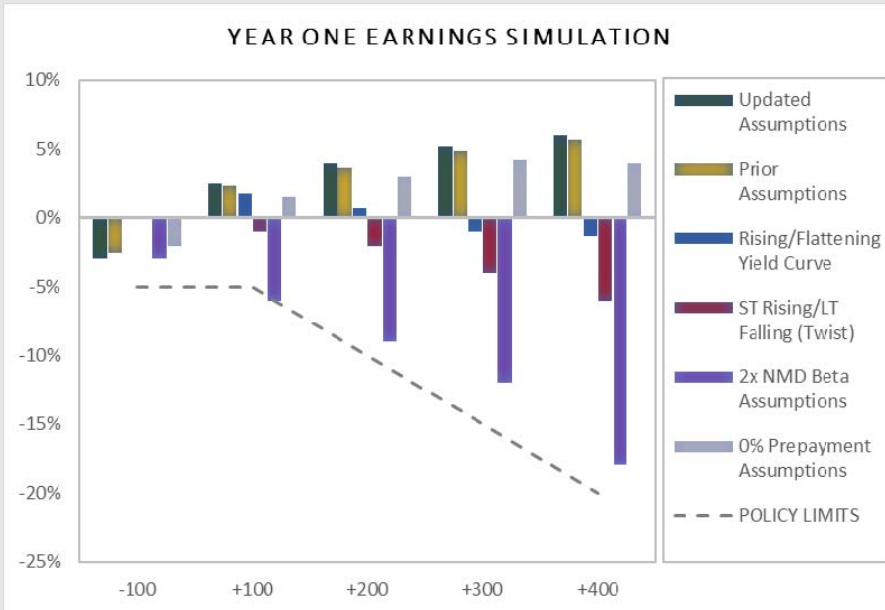
- This single chart shows 30 different data points, compares them directly, and shows policy compliance

Legend: Updated Assumptions, Prior Assumptions, Rising/Flattening Yield Curve, ST Rising/LT Falling (Twist), 2x NMD Beta Assumptions, 0% Prepayment Assumptions, POLICY LIMITS

Backtesting

- Backtesting required at least annually, including 12M backtest
- Only applicable to earnings simulations
- Most useful backtest is account-level rate/volume/mix analysis
- May become less useful as rates begin to change and require adjustments for fractional rate changes or yield curve shifts; supplemental analysis or reasonableness testing may be needed
- Focusing on category totals can be misleading (see next slide)

Backtesting (continued)

	Forecasted			Actual			Variance			Variance due to:		
	Volume	Rate	Inc.	Volume	Rate	Inc.	Volume	Rate	Inc.	Volume	Rate	Mix
Fed Funds	2,000	0.25%	5	5,000	0.25%	13	3,000	0.00%	8	8	-	-
Loans	8,000	5.00%	400	5,000	5.00%	250	(3,000)	0.00%	(150)	(150)	-	-
Total	10,000	4.05%	405	10,000	2.63%	263	-	-1.43%	(143)	-	(143)	-

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Advanced Modeling

- Dynamic versus static balance sheet
- Projections with multiple rate shifts, such as consensus median, high, and low rate paths.
- EaR is not a substitute for more detailed projections/discussions
  - Economic environment accompanied by rate shifts
  - Noninterest income impact
  - Credit stress/debt service

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Minimum Reporting

- QUARTERLY (12M EaR, 24M EaR, EVE)
  - Summary dashboard report with trends (and policy compliance)
  - Guidance requires "sufficient detail"
  - Key model assumptions

- ANNUALLY
  - Key model assumption review/update
  - Sensitivity/stress testing
  - Nonparallel rate shifts
  - Backtesting results

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Questions?

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