



## Interest Rate Risk

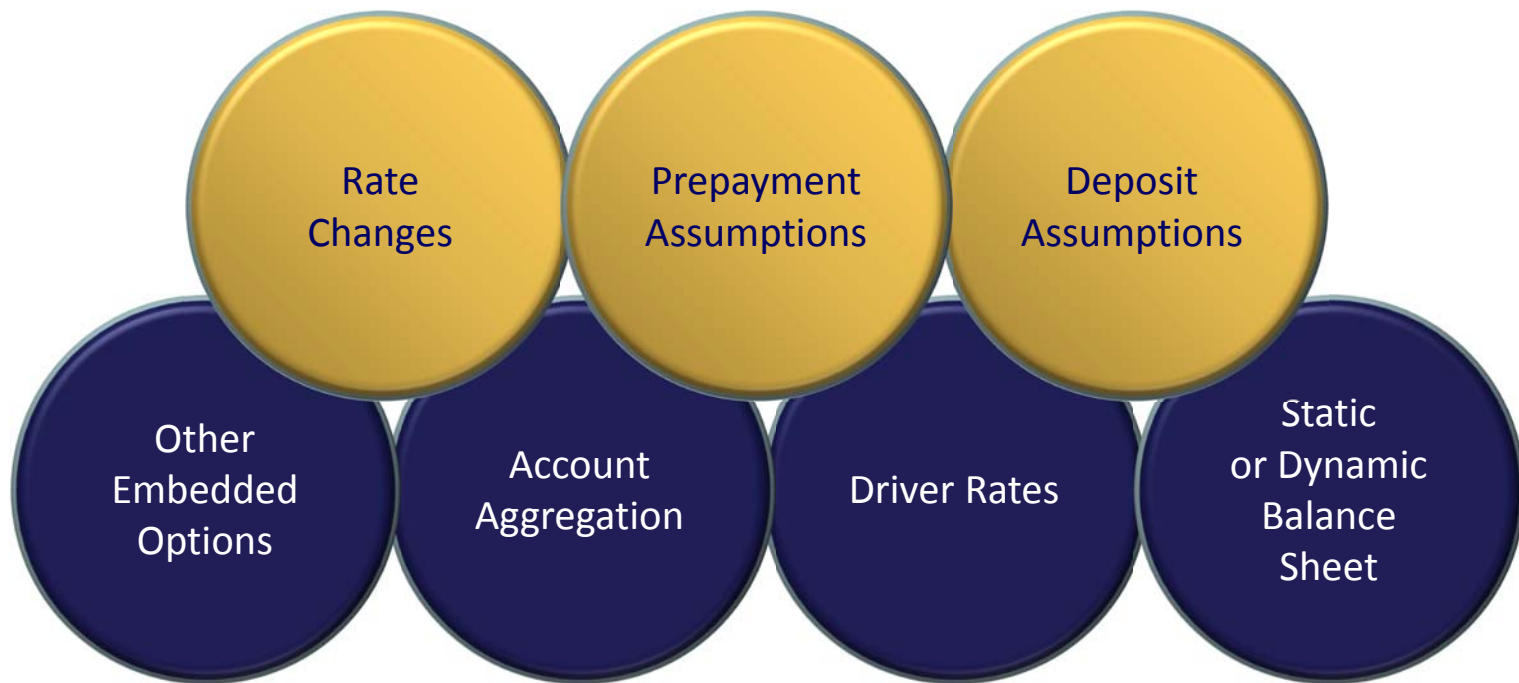
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### IV. Rate Changes and Prepayment Assumptions

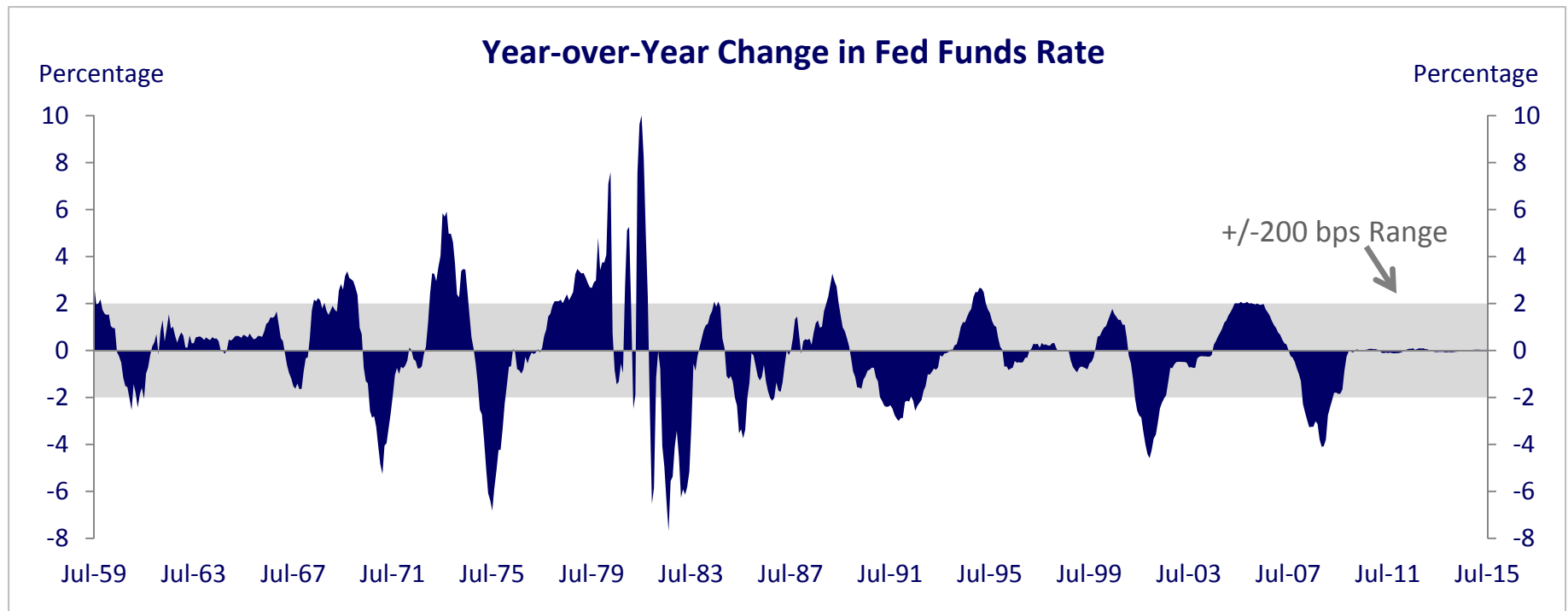
# Management Responsibilities

- **Ensure that the IRR model reasonably captures volatility of income and cash flows from assets, liabilities, and off-balance sheet items**
- **Ensure that assumptions are understood, documented, updated regularly, and reported to the Board**

# Model Assumptions



# Dramatic Rate Changes are Fairly Common



Source: Federal Reserve Board

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# Timing of Rate Change

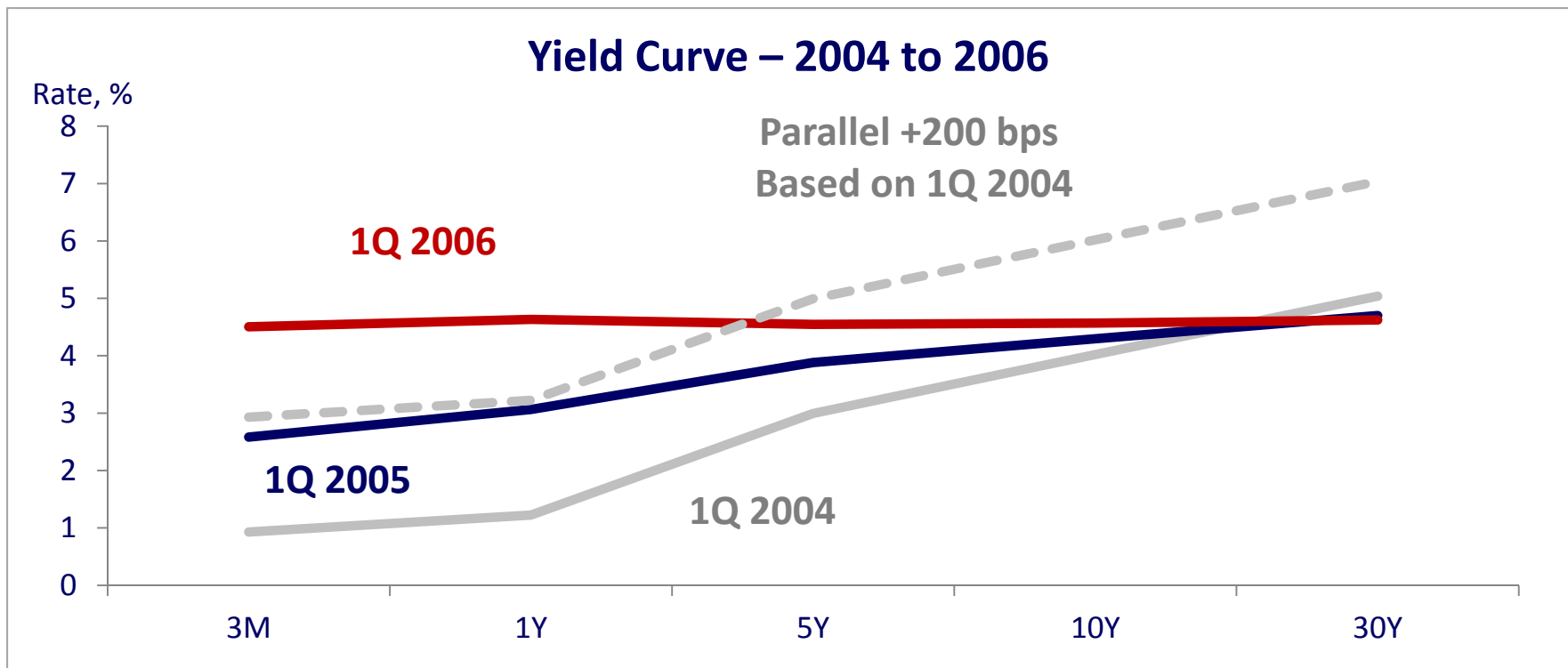
Immediate Shock



Gradual Ramp



# Yield Curve Shapes Change Over Time



Source: Federal Reserve Board / Haver Analytics

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# Factors Impacting Prepayment Estimates

- **Market rates**
- **Underwriting standards**
- **Loan size**
- **Consumer mobility**
- **Delinquency and foreclosure**
- **Events such as death and natural disaster**
- **Loan “seasoning”**

# Prepayment Assumption Sources & Considerations

## ■ Sources

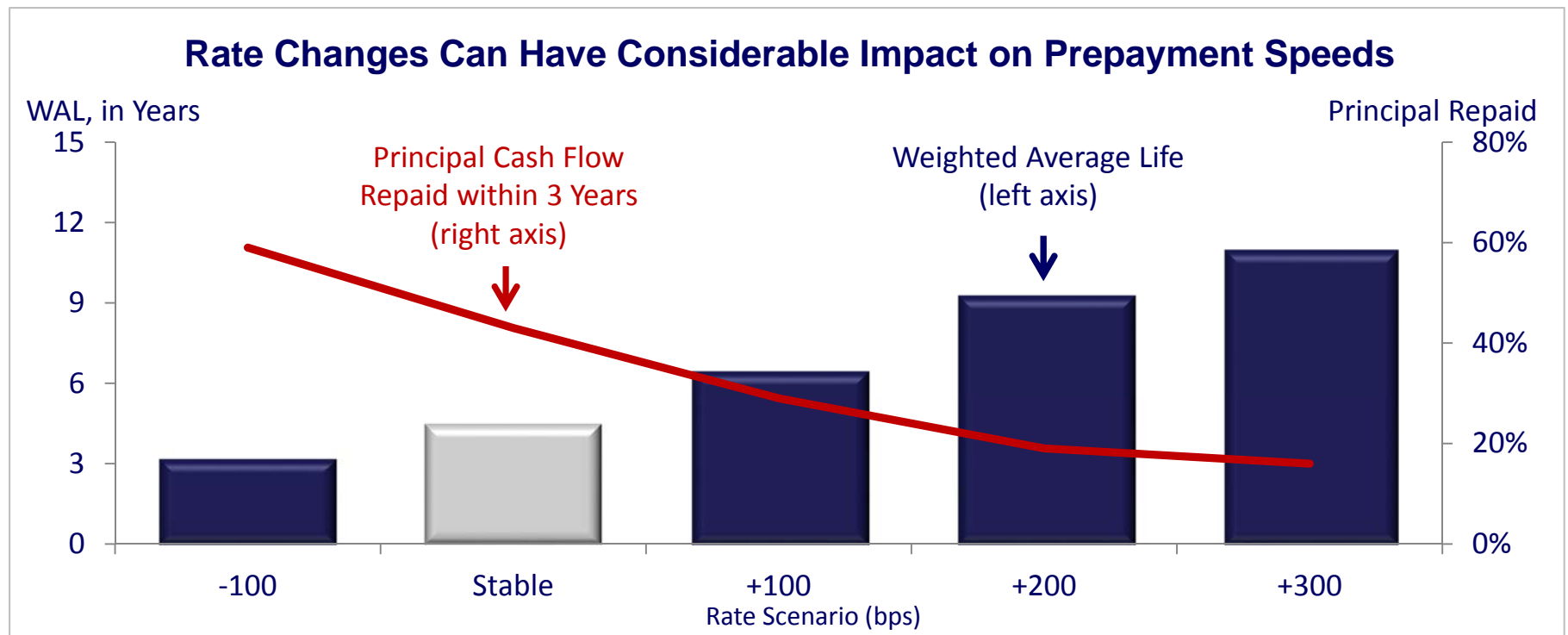
- National Market Proxies
- Third-Party Models
- Internally Generated
- Blended Approach

## ■ Considerations

- Proper Aggregation
- Proxy Selection
- Product Type, Coupon Band, Maturity, and Reset Features
- Periodic Review



# Prepayment Speeds



# Validation of Assumptions – Sensitivity Analysis

- **Helps determine which assumptions have the most influence on model output**
- **Determines when a change in an assumption results in a breach of policy limits and/or elevated risk exposure**
- **Rerun model changing one assumption at a time**

# Summary

- **Management should ensure assumptions are appropriate, supported, and updated**
- **Rate Changes: ensure sufficient magnitude, timing, and yield curve shifts**
- **Prepayment Estimates: ensure proper aggregation and proxies are used**
- **Perform sensitivity analyses**