FDIC

FEDERAL DEPOSIT INSURANCE CORPORATION

# Interest Rate Risk

## II. Types of Interest Rate Risk

# Types of Interest Rate Risk

# Definition of Repricing Risk

**Repricing Risk** = **The risk from timing differences between rate changes or cash flows from assets, liabilities, and off-balance sheet instruments**

# Example of Repricing Risk

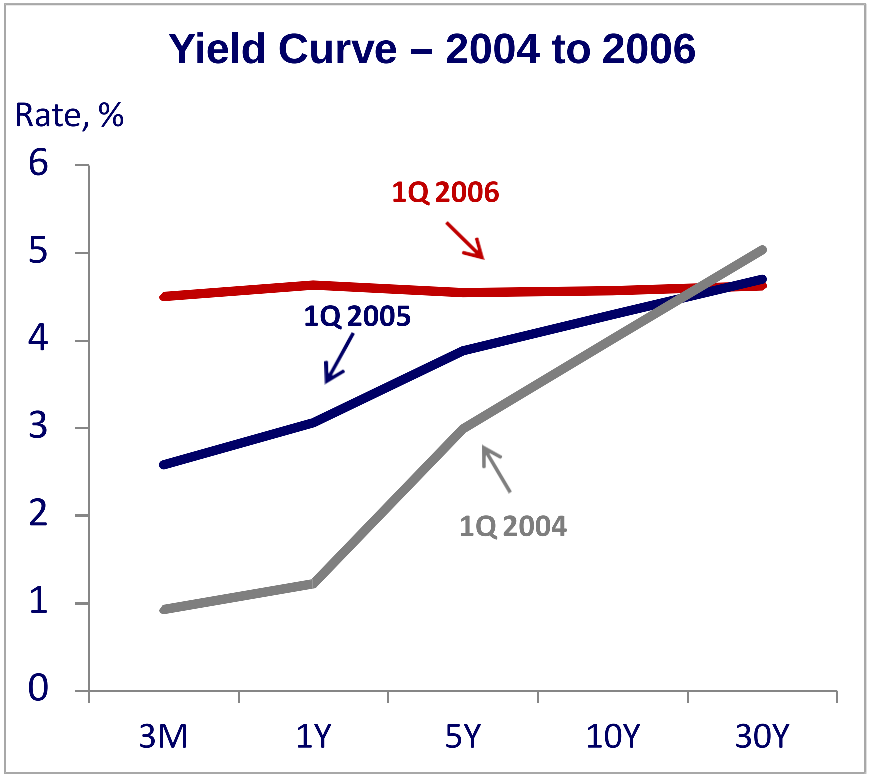
**Assume a 2% increase in time deposit rates in the second year**

| | Period 1 | Period 2 |
|---|---|---|
| 15-Year Mortgage | 4.00 | 4.00 |
| 1-Year Time Deposit | 1.00 | 3.00 |
| Net Interest Spread | 3.00 | 1.00 |

# Definition of Yield Curve Risk

**Yield Curve Risk** = **The risk from non-parallel changes in the yield curve**

# Yield Curve Shifts: A Recent Example of Flattening




- **Strategy: Borrow short and lend long**
- **Risk: Yield curve flattens**
- **1Q 2004: Short-term interest rates began to rise sharply**
- **2006 or 2007: Flat or inverted yield curve**

Source: Federal Reserve Board/Haver Analytics

# Example of Yield Curve Risk

**Flattening Yield Curve:** short-term rates rise faster than long-term rates and reduce net interest income

| | Period 1 | Period 2 |
|---|---|---|
| 15-Year Mortgage | 6.00 | 6.50 |
| 1-Year Time Deposit | 1.00 | 4.00 |
| Net Interest Spread | 5.00 | 2.50 |

# Definition of Option Risk

**Option Risk** = **the risk that cash flows change due to embedded options (e.g., prepayment / extension, call options, deposit runoff)**

# Option Risk

**Assets**

- Residential mortgages
- Mortgage-backed securities
- Callable bonds

**Liabilities**

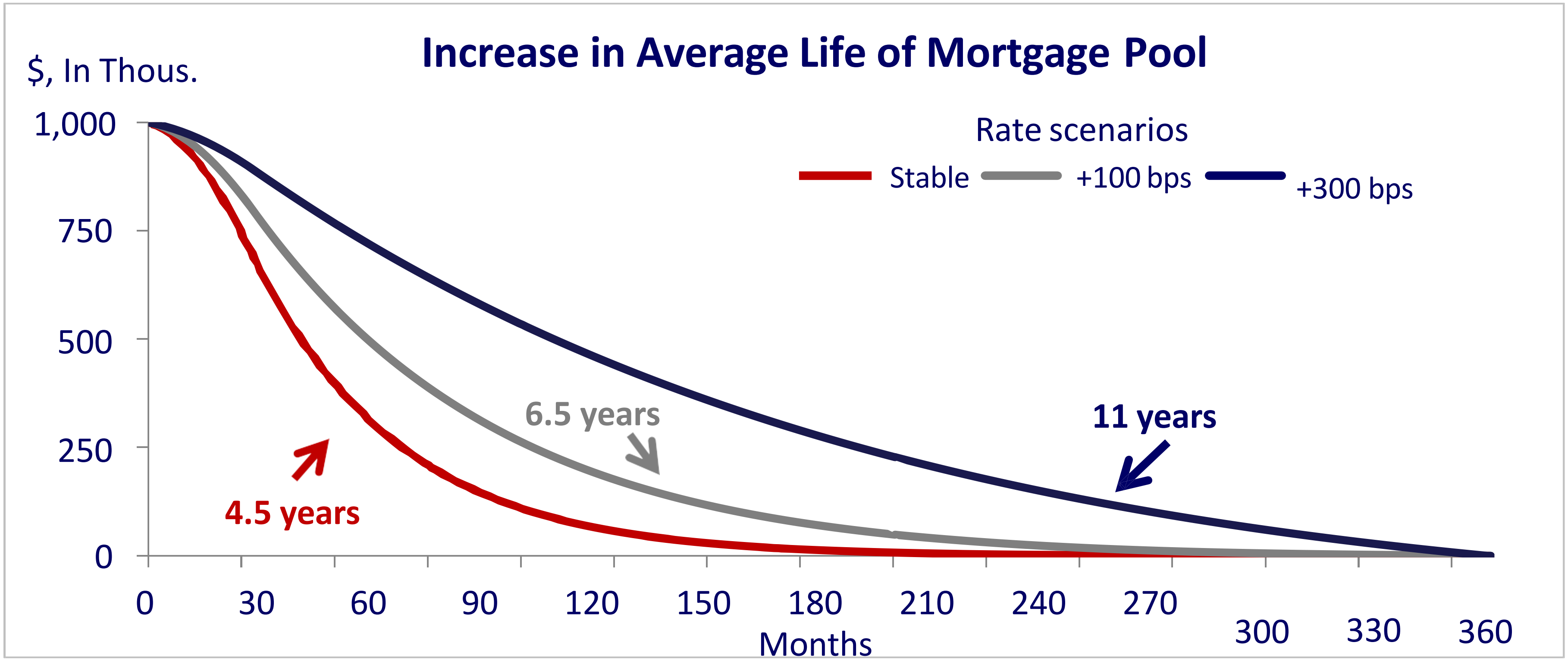
- Non-maturity deposits
- Time deposit redemptions
- Certain FHLB borrowings

# Example of Option Risk

**Assume a 2% Decrease in Mortgage Interest Rates.**
**Customer refinances in Period 2.**

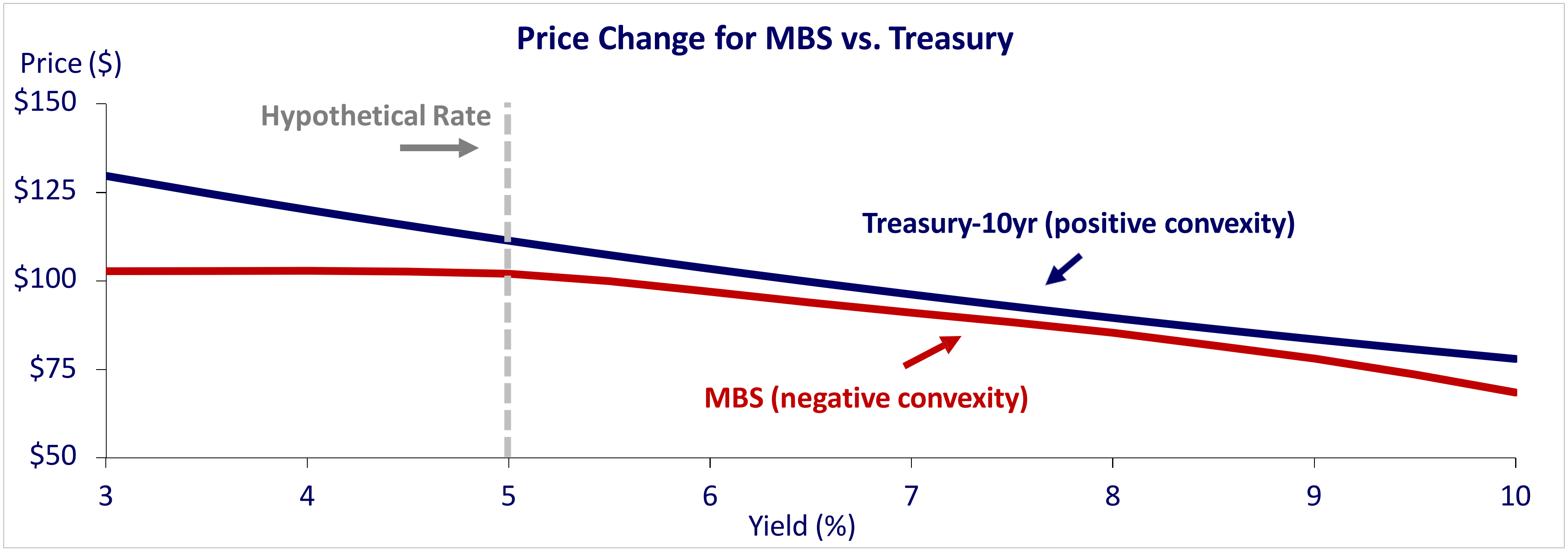
| | Period 1 | Period 2 |
|---|---|---|
| 15-Year Mortgage | 7.00 | 5.00 |
| 3-Year Time Deposit | 4.00 | 4.00 |
| Net Interest Spread | 3.00 | 1.00 |

# Example of Option Risk



# Mortgage Backed Securities are More Price Sensitive as Rates Rise

**Negative Convexity: As interest rates rise, MBS portfolios stand to lose more value than non-callable bonds**



# Definition of Basis Risk

**Basis Risk** = **The risk that different indices with the same repricing frequency do not move in unison**

# Example of Basis Risk

**Short-term rates increase unevenly: 3-month Treasury increases 1% and LIBOR increases 2%**

| | Period 1 | Period 2 |
|---|---|---|
| 3-Month Treasury-based Loan | 3.25 | 4.25 |
| 3-Month LIBOR-based Borrowing | 1.00 | 3.00 |
| Net Interest Spread | 2.25 | 1.25 |

# Summary

- **Interest Rate Risk has several components including:**
  - Repricing Risk
  - Yield Curve Risk
  - Option Risk
    - Prepayment / Extension Risk
  - Basis Risk
- **How financial institutions identify, measure, monitor, and control these risks is critical to an effective IRR Management program**