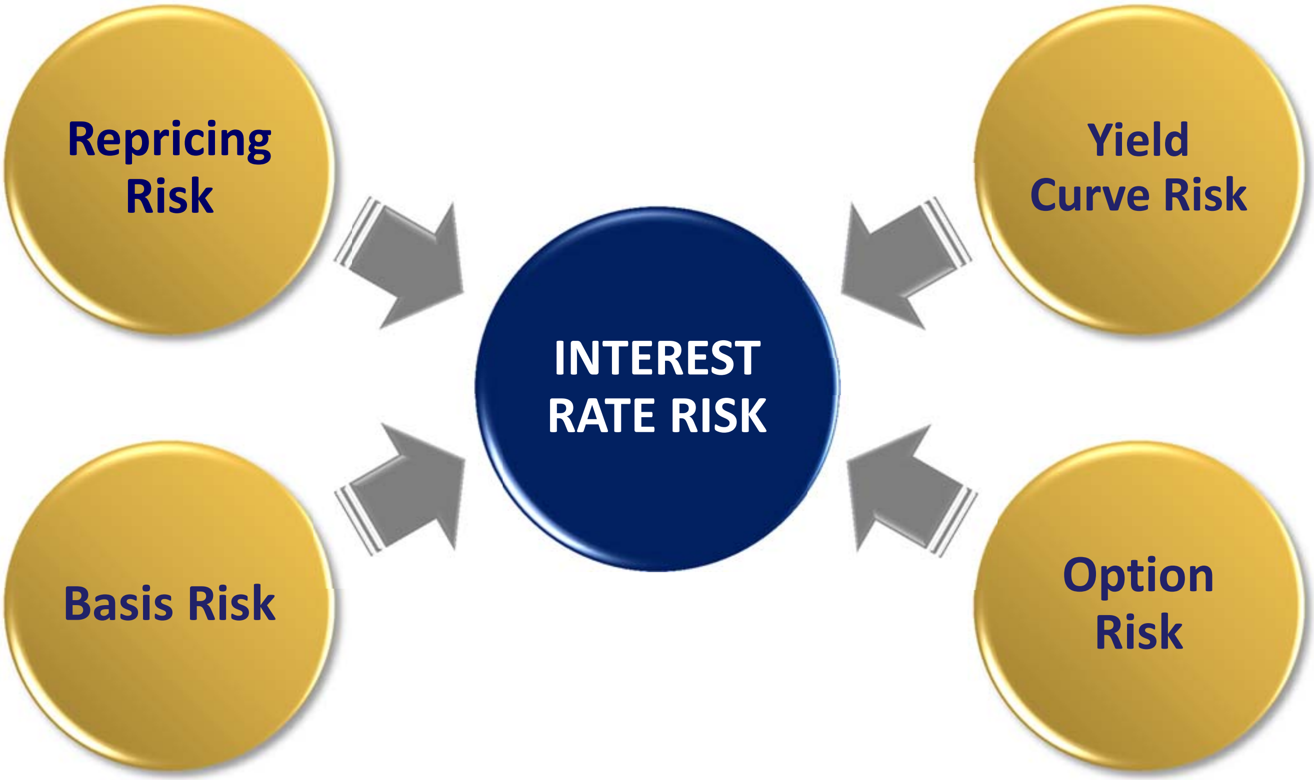
FEDERAL DEPOSIT INSURANCE CORPORATION

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

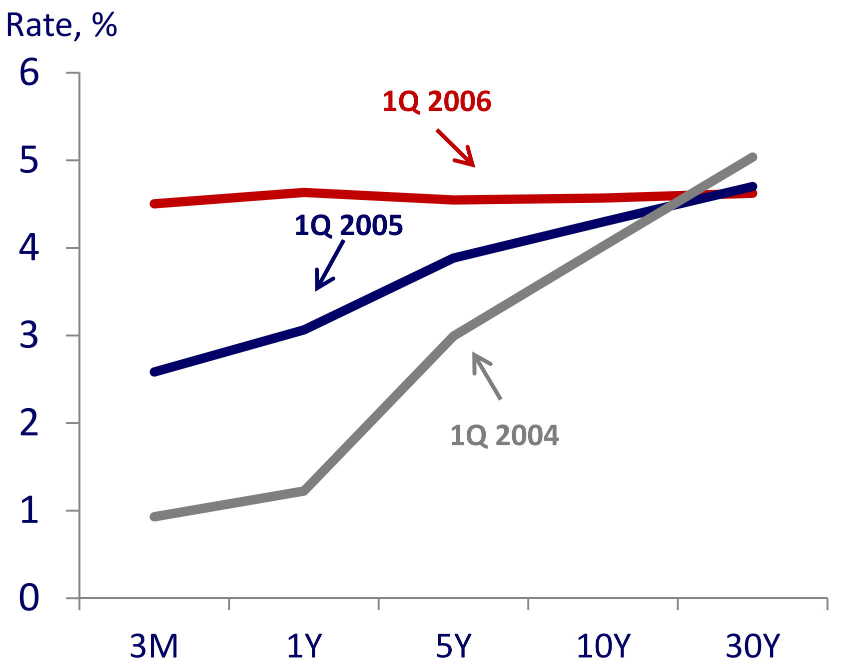
	Period 1	Period 2
15-Year Mortgage	4.00	4.00
1-Year Time Deposit	1.00	3.00
Net Interest Spread	3.00	1.00

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

Yield Curve – 2004 to 2006



- **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

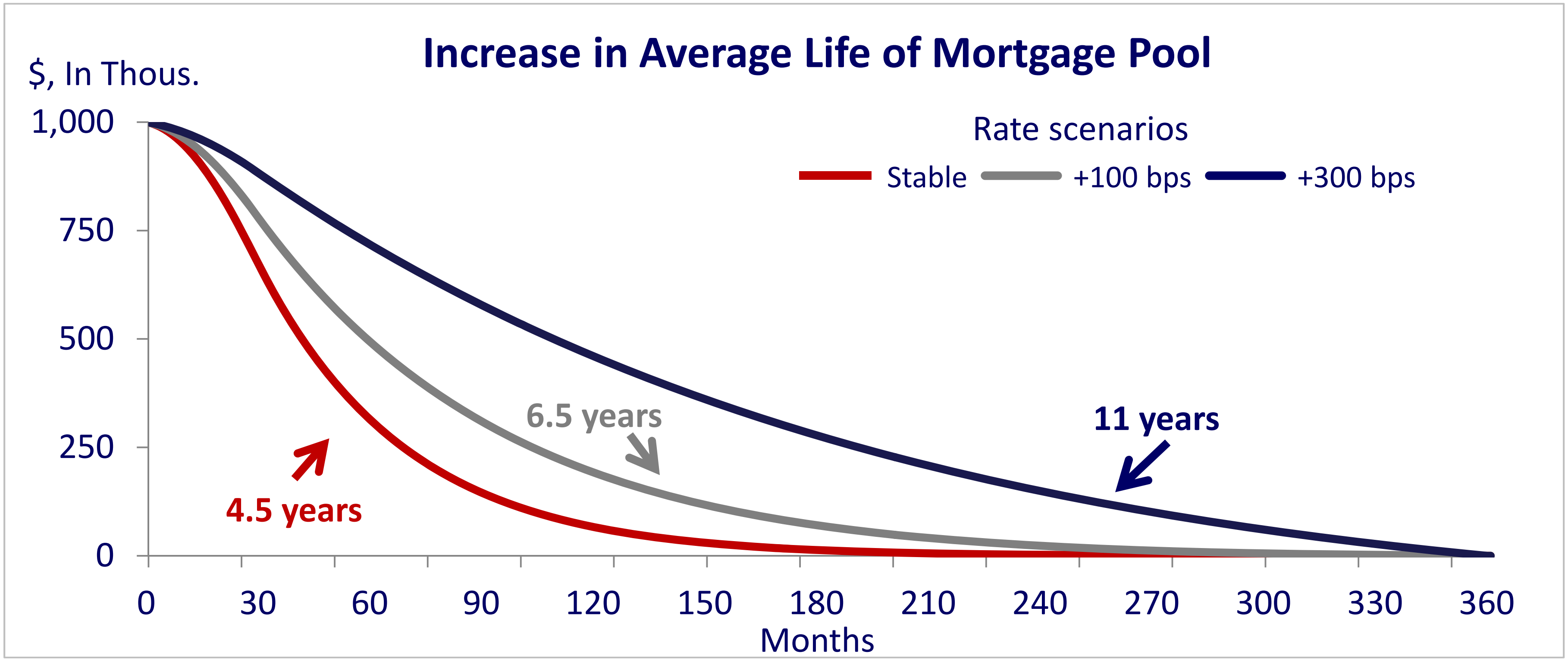
- Non-maturity deposits
- Time deposit redemptions
- Certain FHLB borrowings

Example of Option Risk

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

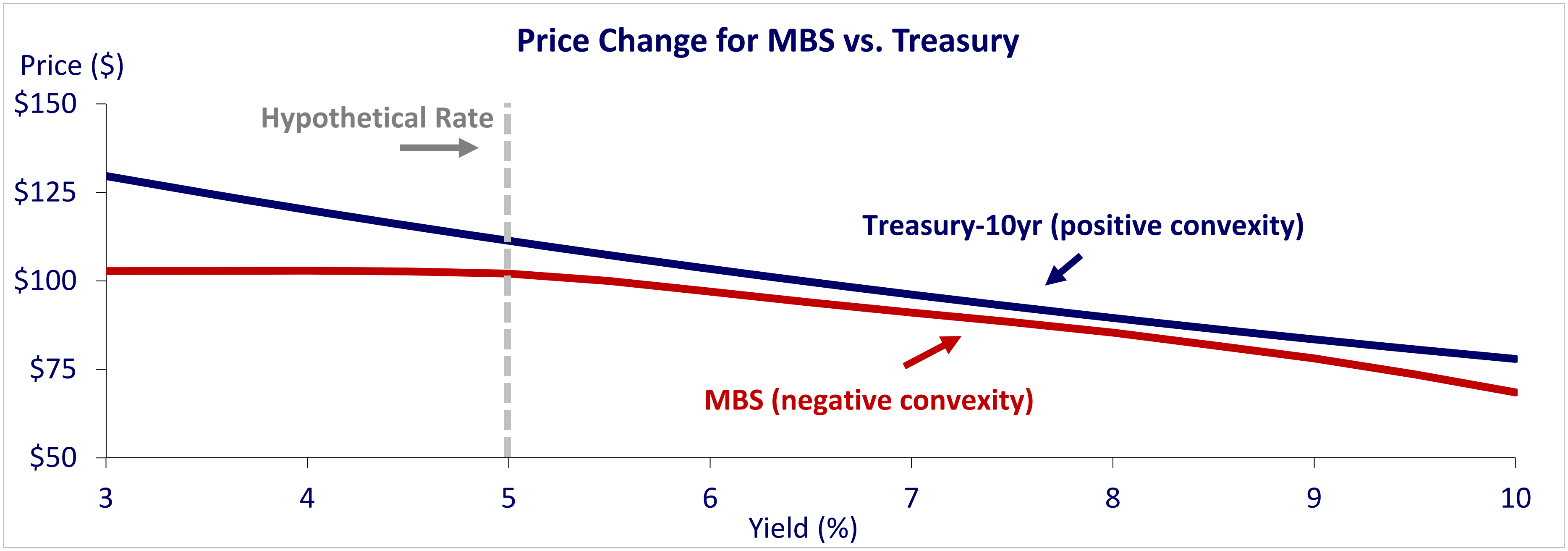
	Period 1	Period 2
15-Year Mortgage	7.00	5.00
3-Year Time Deposit	4.00	4.00
Net Interest Spread	3.00	1.00

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**