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∞ **ALM 101** ∞

**AN INTRODUCTION TO
INTEREST RATE RISK (IRR)**

**PRESENTED BY
MARK H. SMITH**



∞ ALM 101 ∞

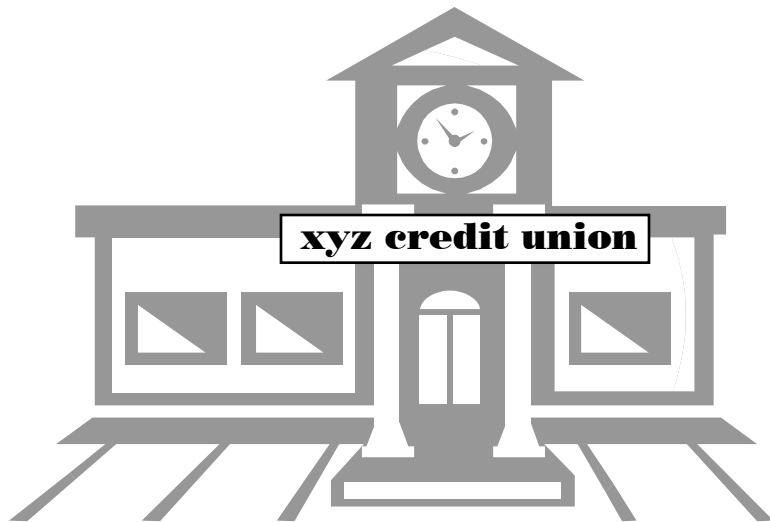
AN INTRODUCTION TO INTEREST RATE RISK (IRR)

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SESSION 3

LOAN OPTIONALITY



❧ **SESSION 3** ❧

OBJECTIVE

Learn to define and identify the causes of loan optionality.

LOAN OPTIONALITY DEFINED

Borrowers have certain choices available to them which they may exercise after the loan is made and disbursed.

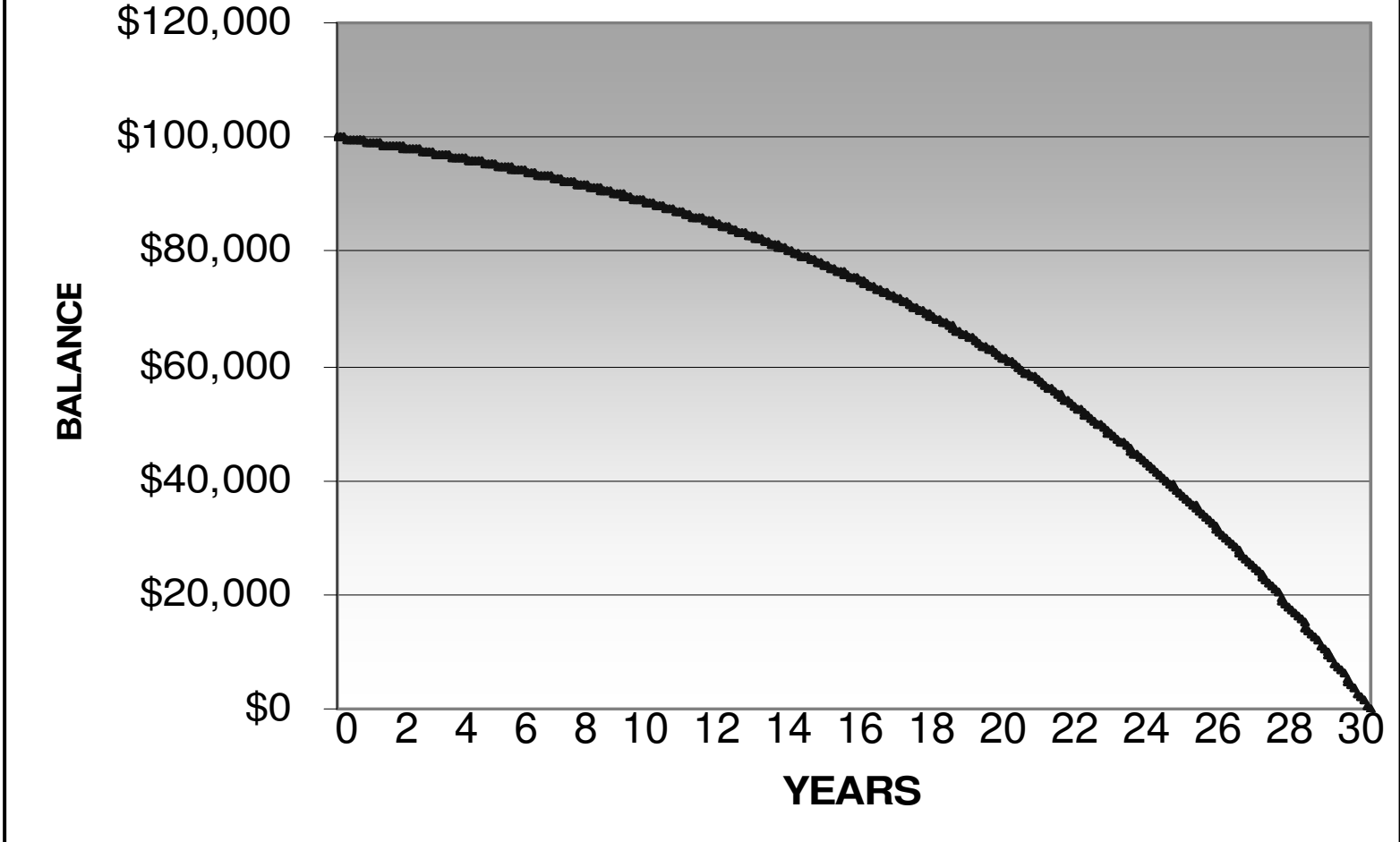
The choices are mainly with regard to the repayments of principal.



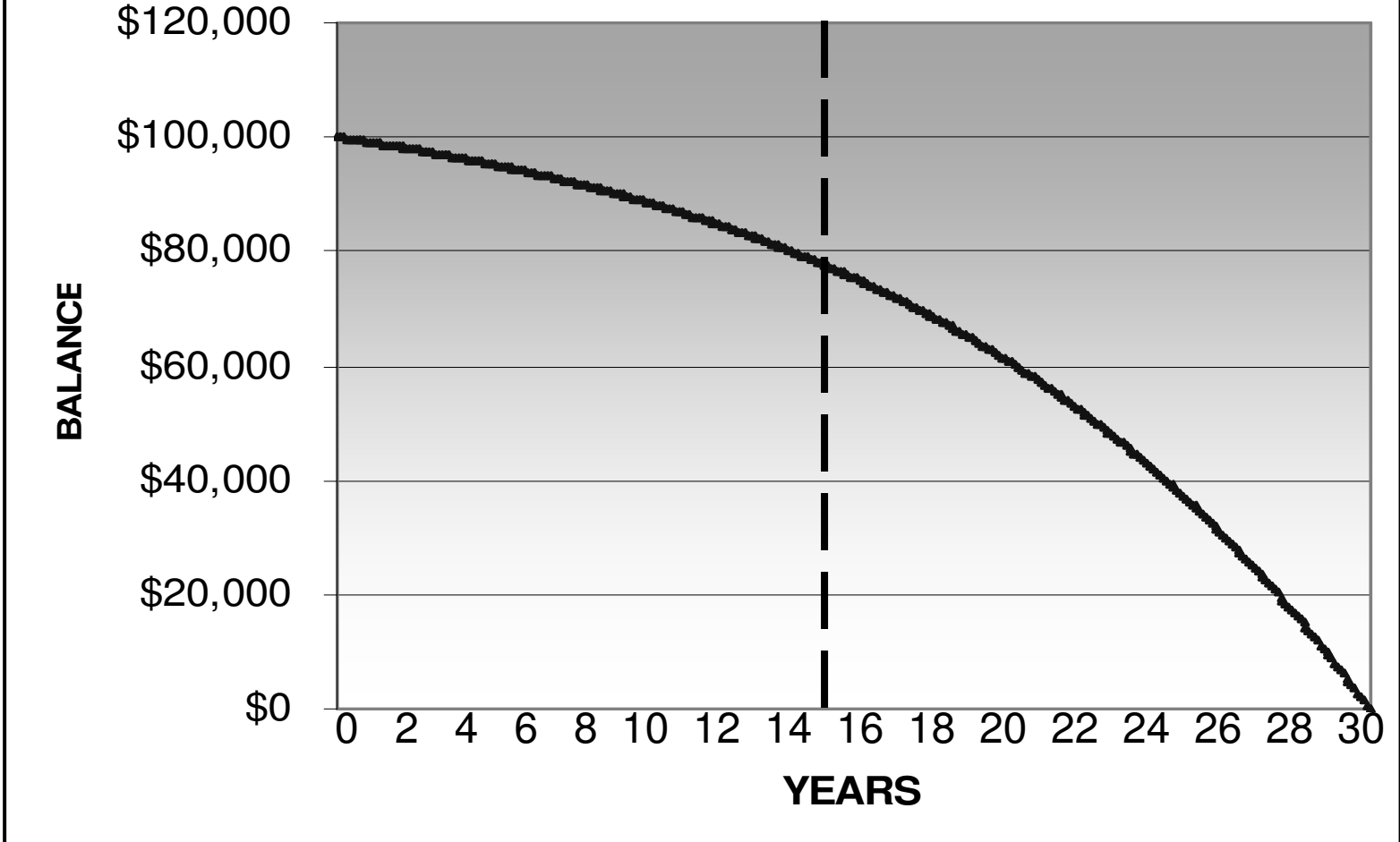
OPTIONALITY
IS BASED ON AN
ASSUMPTION . . .

. . . that borrowers will make financial decisions which are in their overall best interests—that is, borrowers cannot be counted on to consider the impact of their decisions on the credit union.

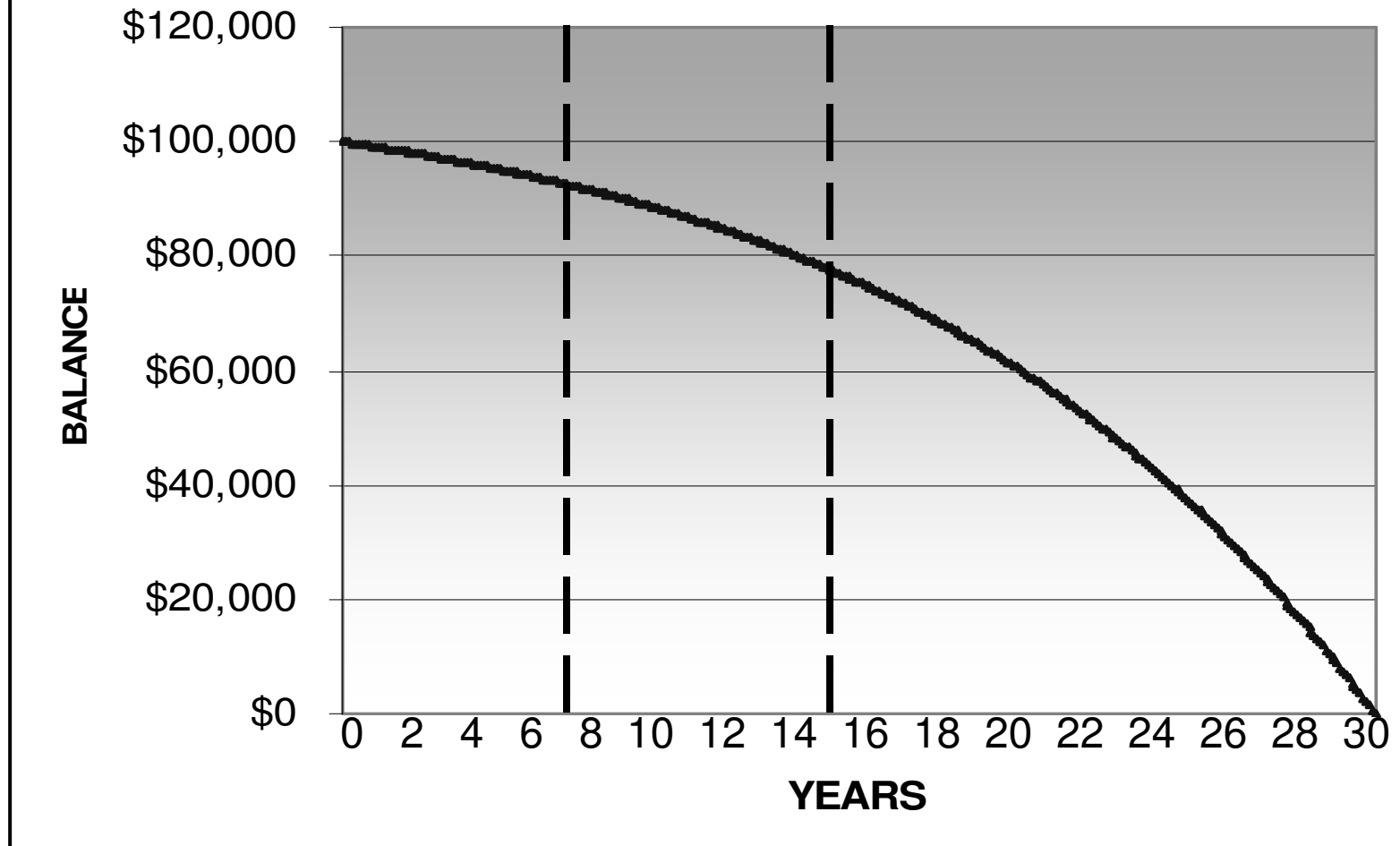
30-YEAR MORTGAGE LOAN PRINCIPAL AMORTIZATION



30-YEAR MORTGAGE LOAN PRINCIPAL AMORTIZATION



30-YEAR MORTGAGE LOAN PRINCIPAL AMORTIZATION



❧ CONCLUSION ❧

- ❖ For large, fixed-rate, long-term loans, borrowers pay principal only at their option
- ❖ This phenomena also is present for large, intermediate-term loans to some degree
- ❖ The impact on borrowers is large
- ❖ The impact on credit unions is large

OPTIONALITY EXAMPLE

Timeframe: 2000-2003

30-Year, Fixed-Rate Mortgage* 8.5% → 5.5%

Payment \$100,000 30-year loan:

@ 8.5% = \$ 769 per month

@ 5.5% = \$ 568 per month

Savings to borrower = \$ 201 per month

Annual Savings = \$ 2,412

The result was that almost all real estate loans prepaid or refinanced in 2001 through 2003

* www.forecasts.org

OPTIONALITY EXAMPLE

Timeframe: 1977-1980

30-Year, Fixed-Rate Mortgage* 8.8%  14.8%

Payment \$100,000 30-year loan:

@ 8.8% = \$ 790 per month

@ 14.8% = \$ 1,240 per month

Cost to borrower = \$ 450 per month

Annual Cost = \$ 5,400

**The result was that almost
all real estate loans
stopped prepayments**

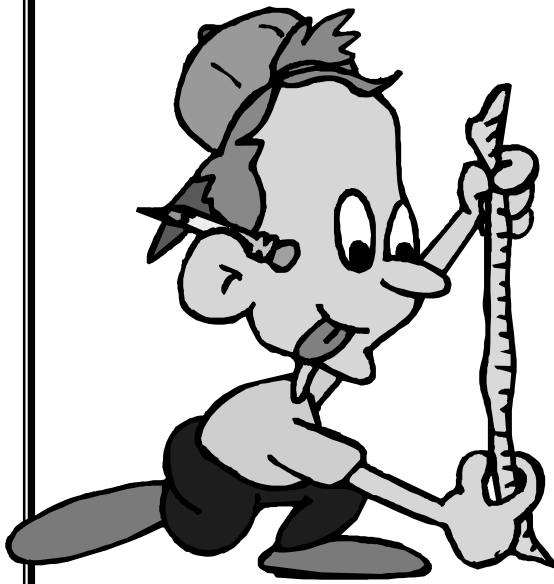
* www.forecasts.org

MANAGEMENT'S RESPONSIBILITY

- ❖ Identify major components of the loan portfolio that have optionality characteristics
- ❖ Identify scenarios to test:
 - **Benchmark** — borrowers are ambivalent as to prepayments
 - **Rates-up** — borrowers typically will not prepay
 - **Rates-down** — borrowers will prepay immediately



MEASURING PREPAYMENT SPEEDS



- ❖ Industry Averages: Are broad indicators which may or may not be applicable to your credit union
- ❖ Unique Credit Union Loan Turnover History: Relatively simple; not always precise; but, for most credit union applications, using the loan turnover ratio will suffice
- ❖ Buy Expensive Software and perform a precision analysis of your prepayments
- ❖ Hire an Expensive Consultant to perform the precision analysis

SESSION 3 SUMMARY

- ❖ For large, long-term loans, borrowers pay on the principal at their option
- ❖ Borrowers will use this optionality in their best interests
- ❖ Optionality impacts all large, long-term, fixed-rate loans
- ❖ Optionality also impacts mid-size, mid-term loans, but to a lesser degree
- ❖ Management must estimate prepayment speeds for base-case, rates-up, and rates-down scenarios

**We at Mark H. Smith Inc.
wish you success**



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