

WHAT YOU NEED TO KNOW AS A DIRECTOR

Police Officers' Credit Union Conference | May 6, 2014



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Agenda

- Measuring interest rate risk
 - Measurement tools
 - Interpreting results
- Aligning goals
- Understanding the major drivers of the ALM report
- Questions to ask



What is Risk?

- Possibility of an event occurring which will have an impact on the achievement of objectives
 - Variance between outcome and expectation
- Interest rate risk
 - The possibility of an increase or decrease in **value** and **income** resulting from a change in interest rates



IRR Reporting

Two major analyses used in measuring interest rate risk



Your Desired Position

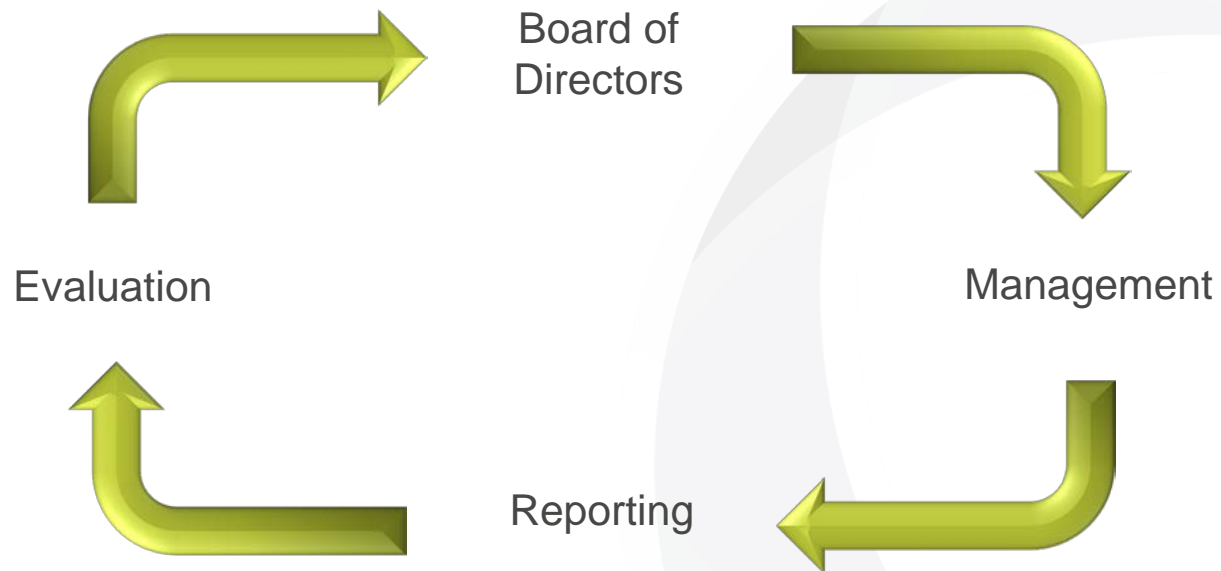
- What is the goal of the credit union?
 - How much risk is tolerable?
 - Risk / return trade off
- With these guidelines in place, management can then agree upon strategies to either maintain the balance sheet's current position or guide it in a different direction
 - Is there room to extend the balance sheet (take on risk) for the benefit of future earnings? If so, when, where, how much?

Understanding Your Position

- Important to understand:
 - High level overview of the assumptions
 - Setup of the model
 - Limitations
 - Quality of the data
 - Modeling unique loan types



Constant Evaluation

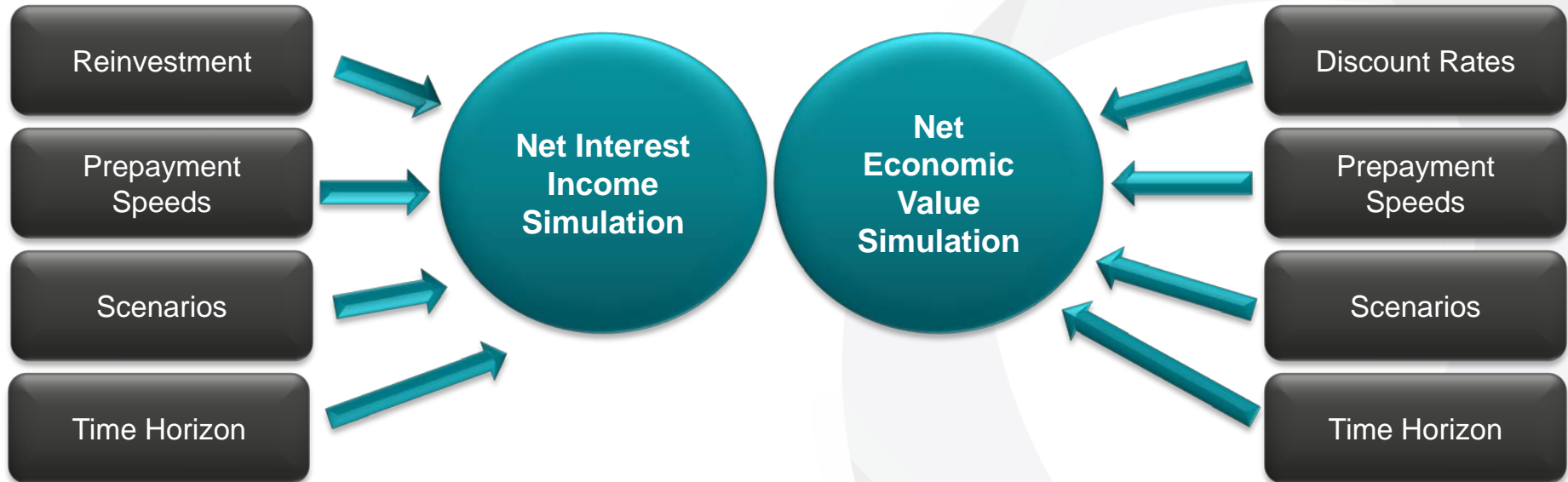


Understanding the Underlying Assumptions

- Before management can put a strategy into place, realize that assumptions drive all models
- This will allow the board to appropriately utilize a report, and to ask important questions about the results



Data Files



Net Interest Income Simulation



ALM FIRST

Earnings Simulation Steps

- Steps to produce the net interest income simulation
 - Loan level detail is loaded into the model
 - Month end balance sheet is the starting point
 - Over a 12 month period, the model takes all monthly cash flows (monthly principal received, any additional principal, maturities) and reinvests these cash flows back into the same asset / liability at current offering rates (or market rates for investments)
- Important: balance sheet is held constant

Reinvestment Rates

- Since balances are held constant, what is the appropriate source for reinvestment rates?

**Current
Offering
Rates**

**Current
Market
Rates**

Income Simulation Results

INCOME ANALYSIS	Declining	Base	Rising	Shock Up 300
Net Interest Income	\$18,667	\$19,295	\$15,308	\$17,697
% Change from Base	-3.25%	0.00%	-20.66%	-8.28
Net Income	\$8,063	\$8,690	\$4,704	\$7,093
% Change from Base	-7.22%	0.00%	-45.87%	-18.38
Return on Assets	0.67%	0.72%	0.39%	0.59%

Net Economic Value

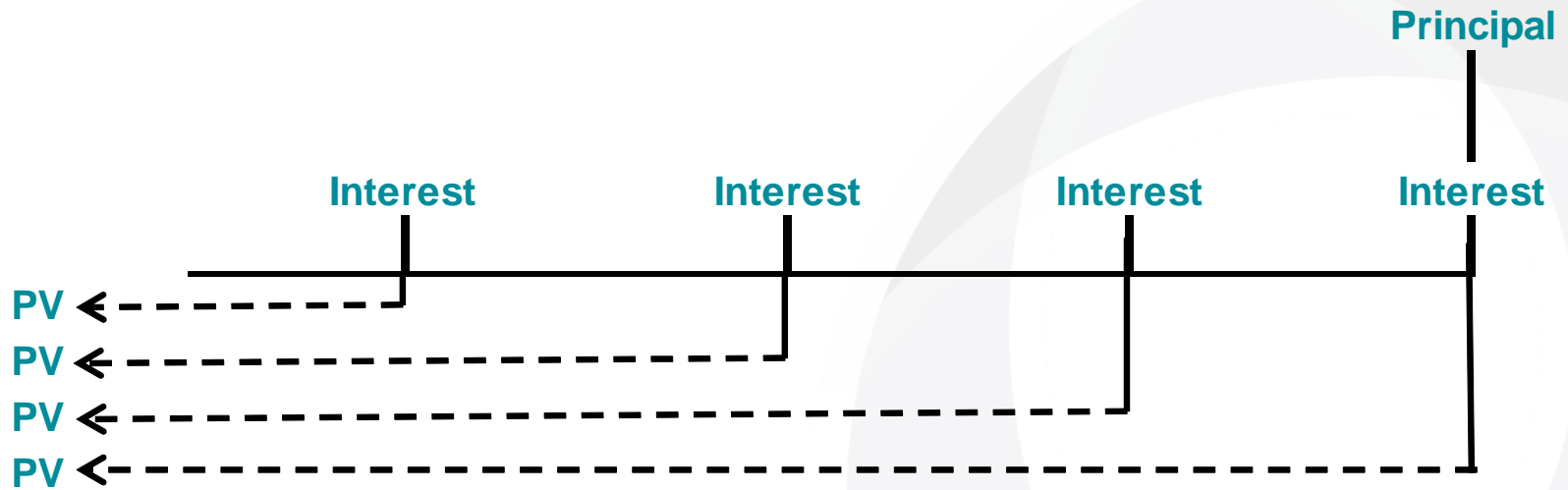


ALM FIRST

Steps in Fixed Income Valuation

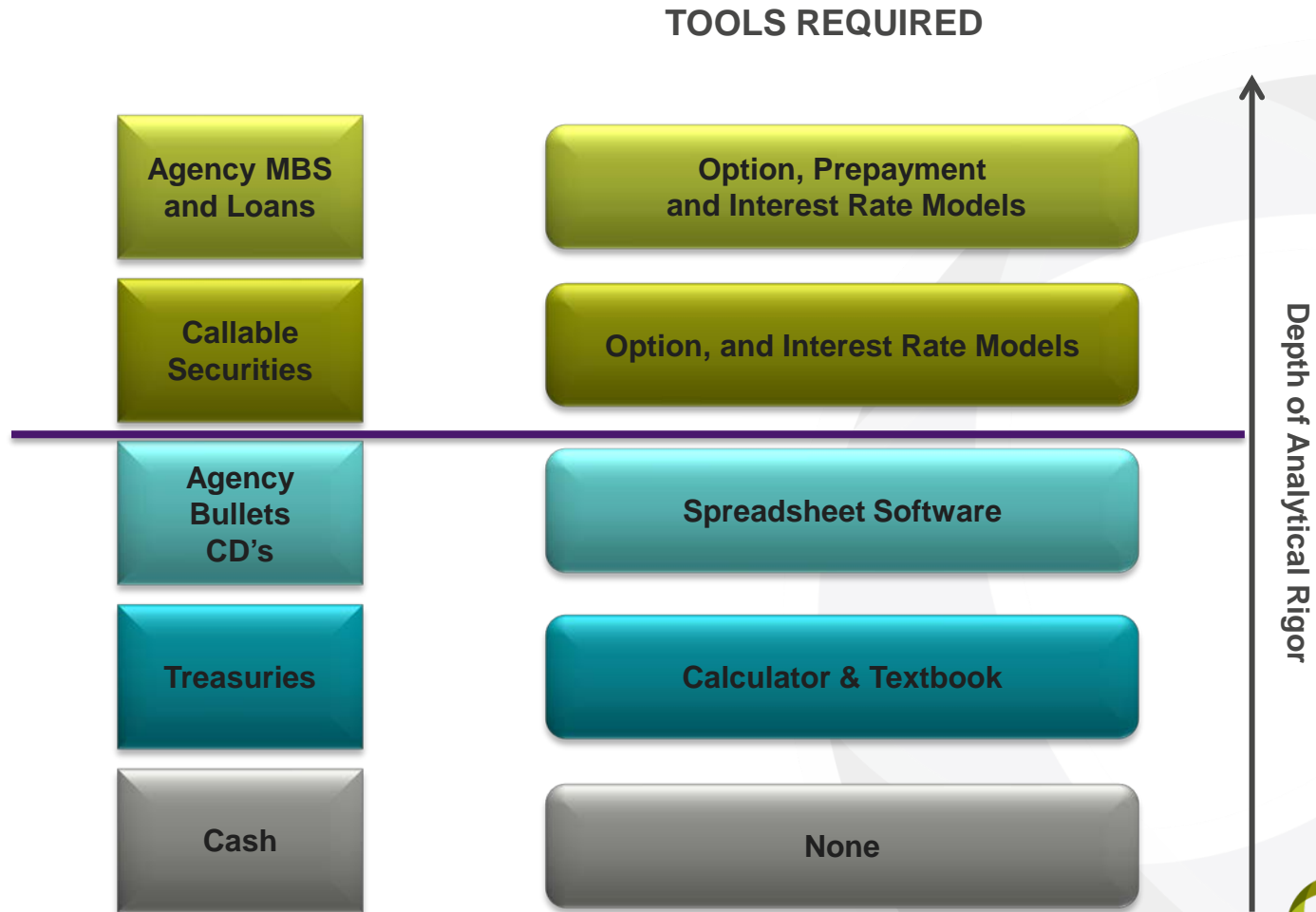
- Estimate the cash flows
 - Principal and interest payments
 - Need to use a model to project cash flows for securities with:
 - Embedded options (call feature, prepayments, caps, floors)
 - Rate on the security resets
- Determine the appropriate discount function (single rate or curve)
- Calculate the present value of the estimated cash flow stream

Present Value



Present Value

Systems and Tools for Actionable Analysis



Net Economic Value Simulation Steps

- Steps to produce the net economic value simulation
 - Load loan level detail into the model
 - Month end balance sheet is the starting point
 - Use the appropriate discount rate (market rate) to calculate the economic value of assets and liabilities

Discount Rates

- What is the appropriate source for discount rates?

**Current
Offering
Rates**

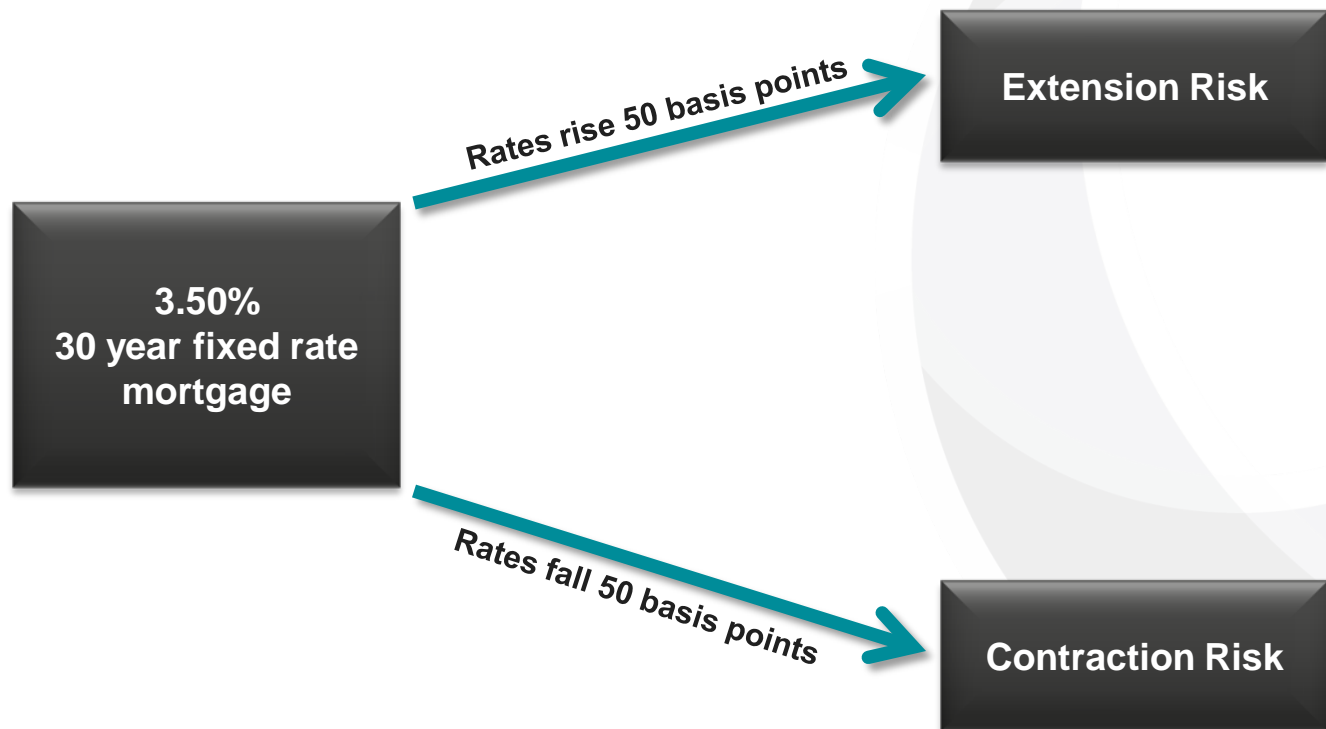
**Current
Market
Rates**

Economic Value Simulation Results

NEV ANALYSIS	(200)	(100)	Base	100	200	300
NEV Ratio	5.71%	6.89%	8.08%	8.18%	7.54%	6.35%
NEV Percent Change	-28.88%	-14.01%	0.00%	-0.69%	-10.79%	-26.93%

Prepayment Speeds

- Prepayments – principal repayments in excess of scheduled principal payments
 - Extension risk – cash flows get longer when rates rise
 - Contraction risk – cash flows get shorter when rates fall



Prepayment Speed Sources

**Actual
Speeds**

**Historical
Speeds**

**Projected
Speeds**



ALM FIRST

Non-maturity Deposits

- Make up a significant portion of liabilities
 - Regular shares, share drafts (interest bearing and noninterest bearing), IRA and money market
- Assumptions are extremely important
- ALM modeling requires:
 - Final maturity – membership sensitivity
 - Rate sensitivity factor
 - How does the dividend rate adjust as market rates move?

'What-if' Analyses

- Examiners are focusing more on interest rate risk
 - Looking at the assumptions used in the model and their reasonableness
- Run alternative analyses to “stress-test” the balance sheet by changing assumptions

'What-if' Analyses

- Common sensitivity and scenario what ifs:
 - 50% prepayment speeds
 - Non-maturity deposit cash flows
 - 50% maturity
 - 50% and 100% increase rate sensitivity factor
 - Market rate environment
 - Change the shape / slope of the yield curve

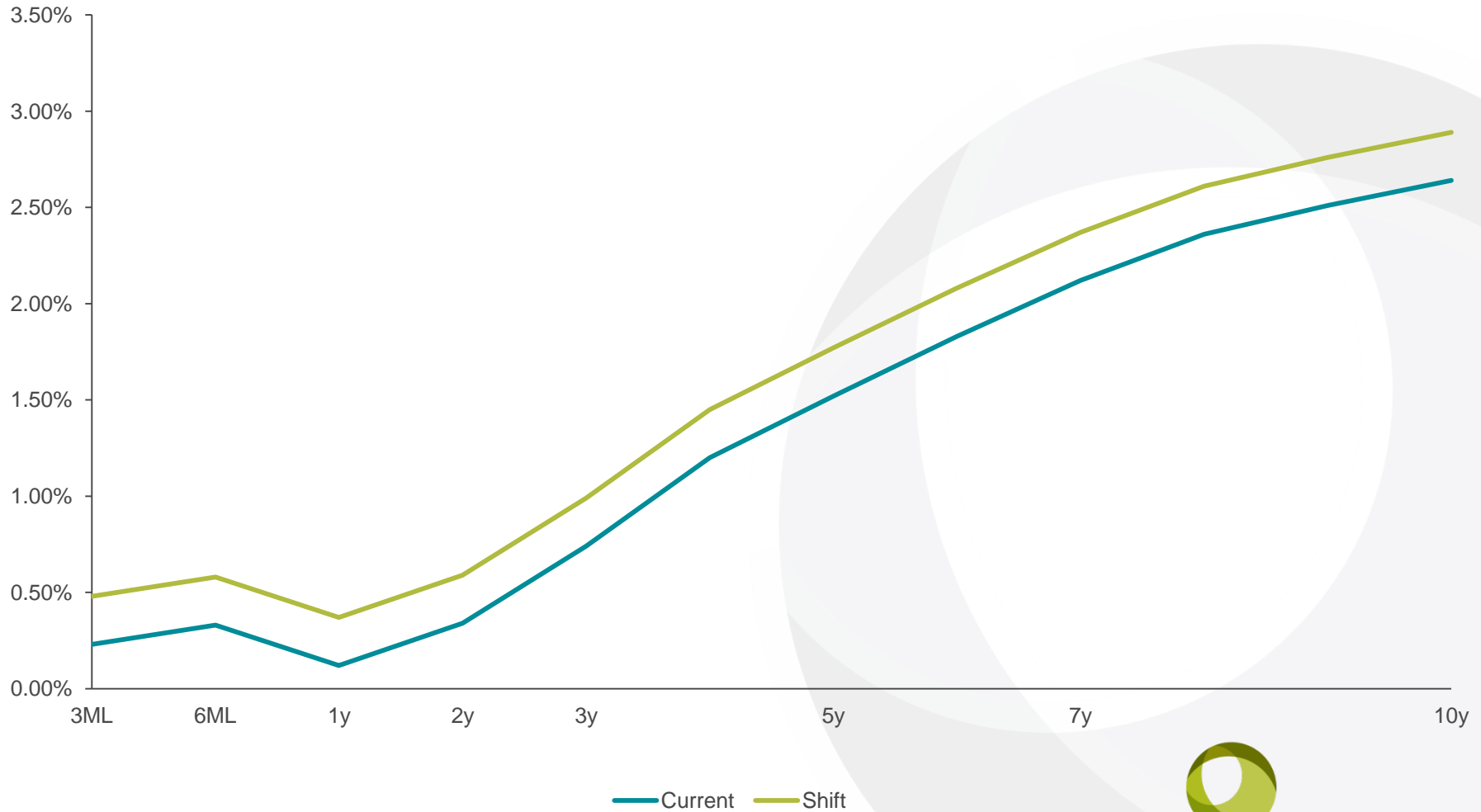


Yield Curve Changes

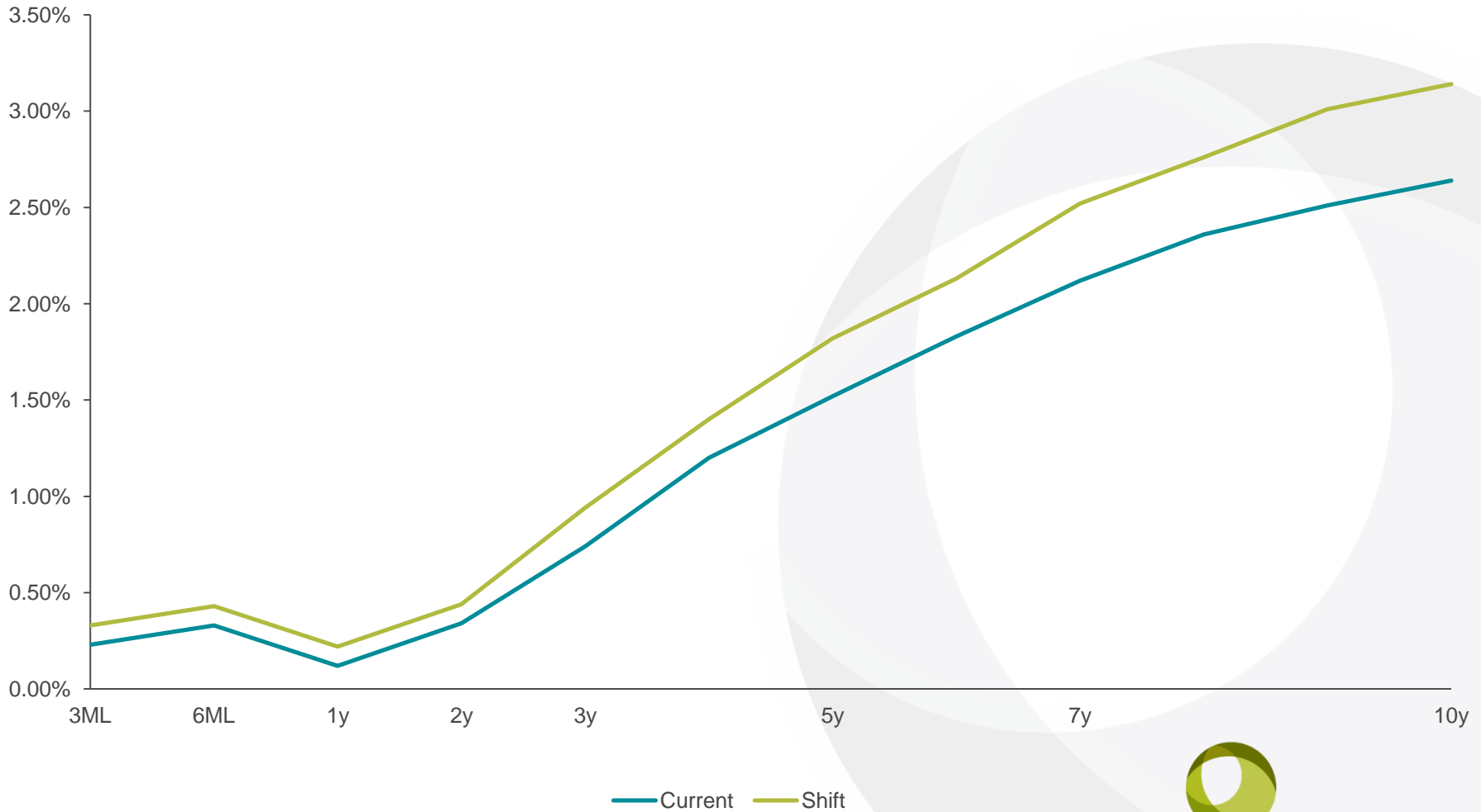
- In the model, rate shifts are typically parallel – all rates at all points move up or down by the exact same amount
- Another approach is a non-parallel shift, where different points react differently



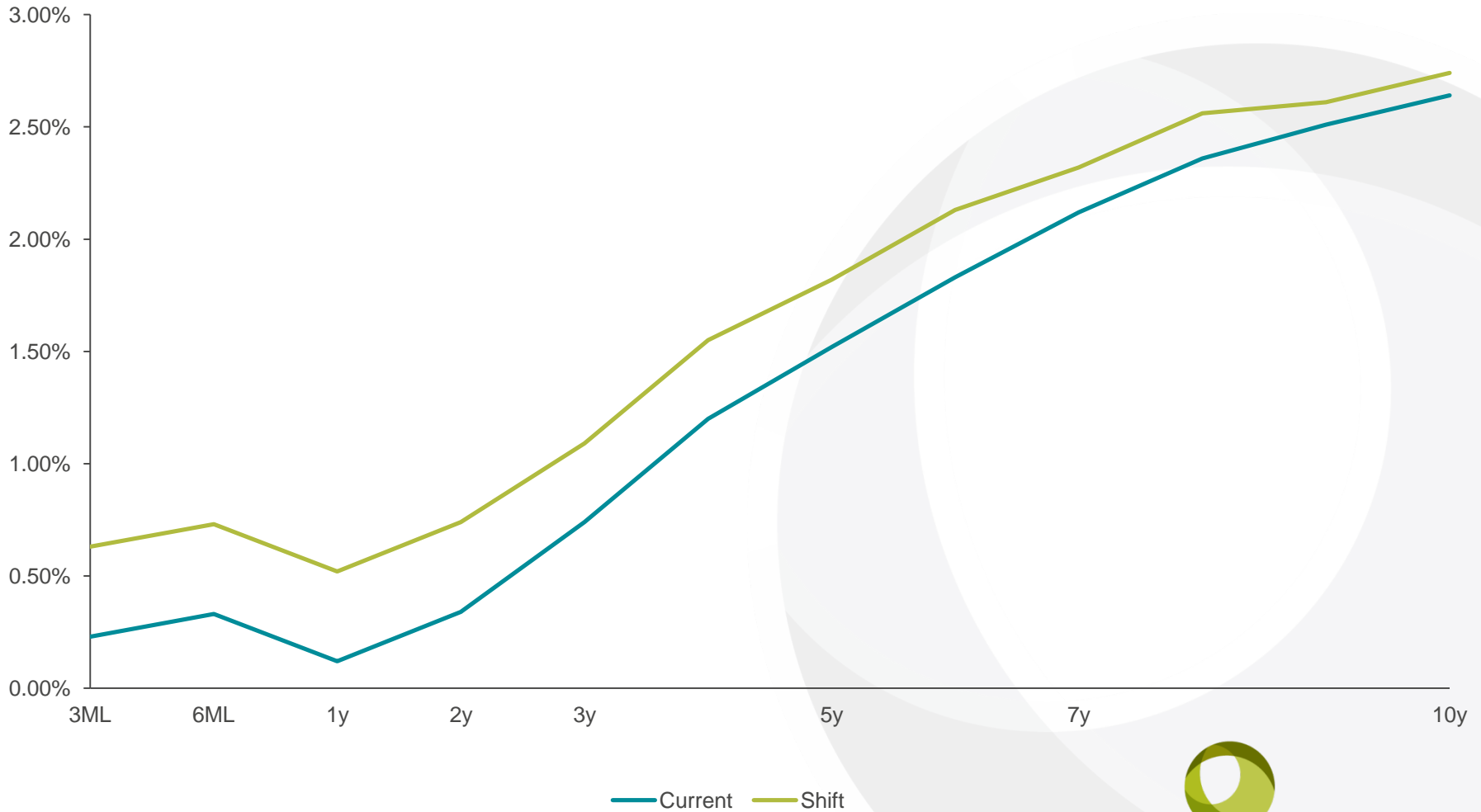
Parallel Shift



Nonparallel Shift: Steepening



Nonparallel Shift: Flattening



'What-if' Results

	Original Report	Mortgage Prepay Speeds Halved	Twisted Yield Curve
NEV % Change Up 300	-12.29%	-22.90%	-15.00%
NEV Ratio – Base	9.82%	9.82%	10.49%
NEV Ratio - Up 300	9.11%	8.09%	9.44%

	Original Report	Coefficients 50% Higher	Coefficients 100% Higher	Non-Maturity Deposits Halved
NEV % Change Up 300	-12.29%	-20.17%	-28.32%	-19.02%
NEV Ratio – Base	9.82%	9.65%	9.49%	9.20%
NEV Ratio - Up 300	9.11%	8.15%	7.20%	7.88%

Recap

- Question the set-up of the model and assumptions
 - Does not mean you distrust the results
- IRR guidelines are focusing more and more on board education and training
 - Understanding the report and its structure is very important
 - Even if the IRR model is run by a third-party provider, the regulatory bodies have made it clear that the institution still must be aware and comfortable with the model structure
- The Board does not need to ask detailed questions in every meeting, but perhaps the institution should host an annual training session, or rotate through different parts of balance sheet assumptions over the course of a year

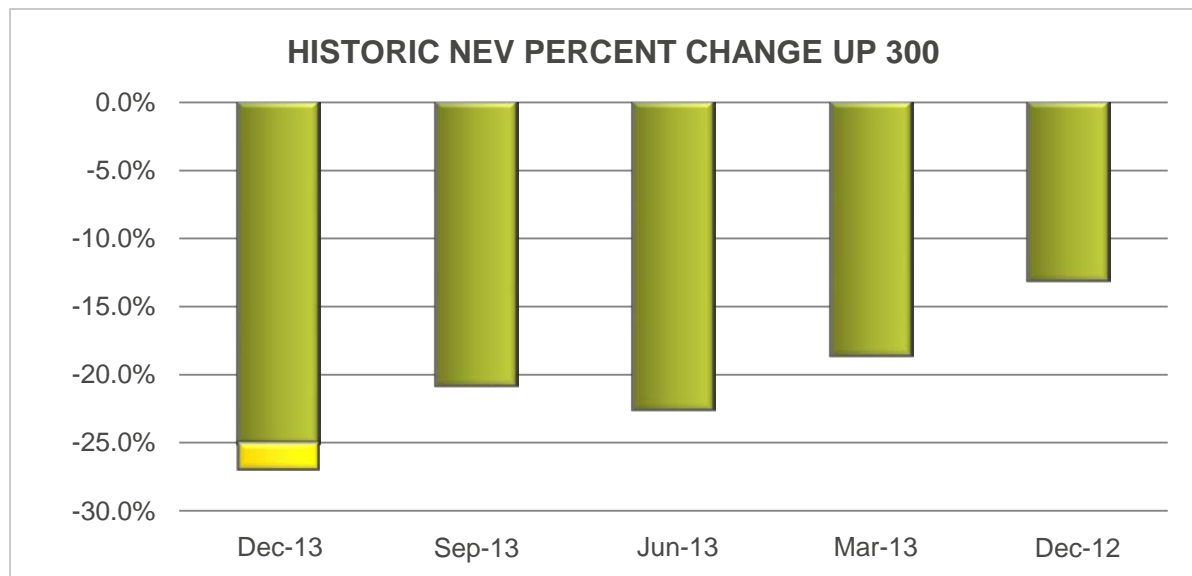
Questions to Ask

- Consider the model structure:
 - How detailed is the setup?
 - Are there differentiations between different mortgage types?
 - Are type specific discount rates and prepayments utilized?
 - Are there any special items on the balance sheet (e.g. unique loan or deposit products) and can the model appropriately capture their characteristics?
 - How are non-maturity deposit values captured?

Trend Analysis

- A trend analysis is a great way to watch movements over time

ANALYTICAL MEASURES	31-Dec-13	30-Sep-13	30-Jun-13	31-Mar-13	31-Dec-12
NEV Percent Change – Up 300	-26.93%	-20.78%	-22.53%	-18.53%	-13.00%
NEV Ratio – Base	8.08%	8.45%	8.22%	8.58%	8.74%
NEV Ratio – Up 300	6.85%	7.65%	7.14%	8.12%	8.98%
NII Volatility - Up 300	-13.44%	-12.56%	-13.08%	-11.87%	-11.24%
Base Case Return on Assets	0.72%	0.65%	0.68%	0.59%	0.52%



Conclusion

- Regulatory focus on interest rate risk continues to build
- Management should be digging into the details of the report
 - Their analysis, combined with conversations with the ALM provider / modeler, should give a clear picture of the position of the balance sheet that can be presented to the board
- As a Board member, it is still imperative to understand
 - Construction of the report
 - What the numbers mean
 - How changing management decisions and / or changing assumptions can place the balance sheet in a different position



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