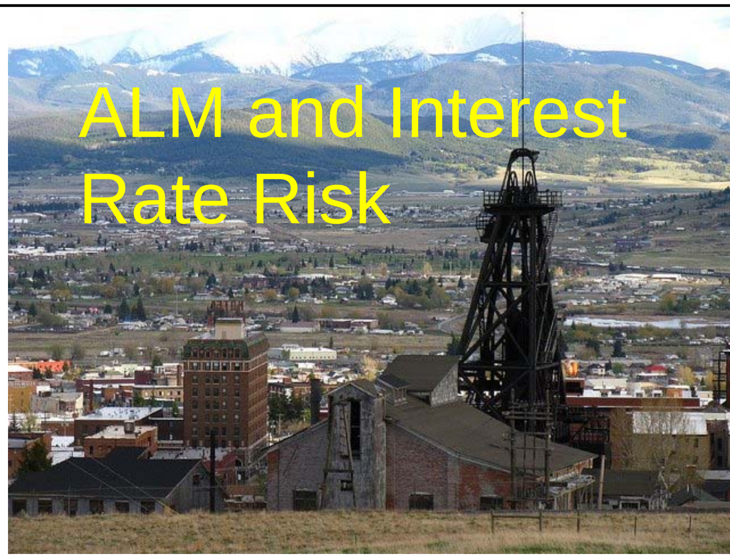
ALM and Interest Rate Risk



By Tim Harrington, CPA

TIM Touch Inspire Motivate

MONTANA'S CREDIT UNIONS
Educate. Advocate. Collaborate.

About Tim Harrington, CPA

28 years credit union experience

36 years business/consulting experience

Consulted on nearly 1,000 credit union projects

A regular speaker at CUNA and League Conferences, speaking at over 1,000 events

Former Chairman of the Board of successful $150 million dollar credit union

Graduate of Gonzaga University

What is our risk?

We are in an inherently risky business.

•People walk out with our money and leave us a promise

•Interest rates change and test our ability to survive, etc.

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Rule of Capitalism

The “market” compensates investors for accepting higher risk.

- Greater risk=higher rate
- Greater degree of uncertainty = higher the yield should be
- Further into the future one commits = the higher yield the yield should be

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Idea of Asset/Liability Management-ALM

To manage the:

- –Balances/Mix
- –Pricing
- –Terms (duration or life span)

  of Assets and Liabilities

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Idea of Asset/Liability Management-ALM

Almost could be called:

Loan/Deposit management

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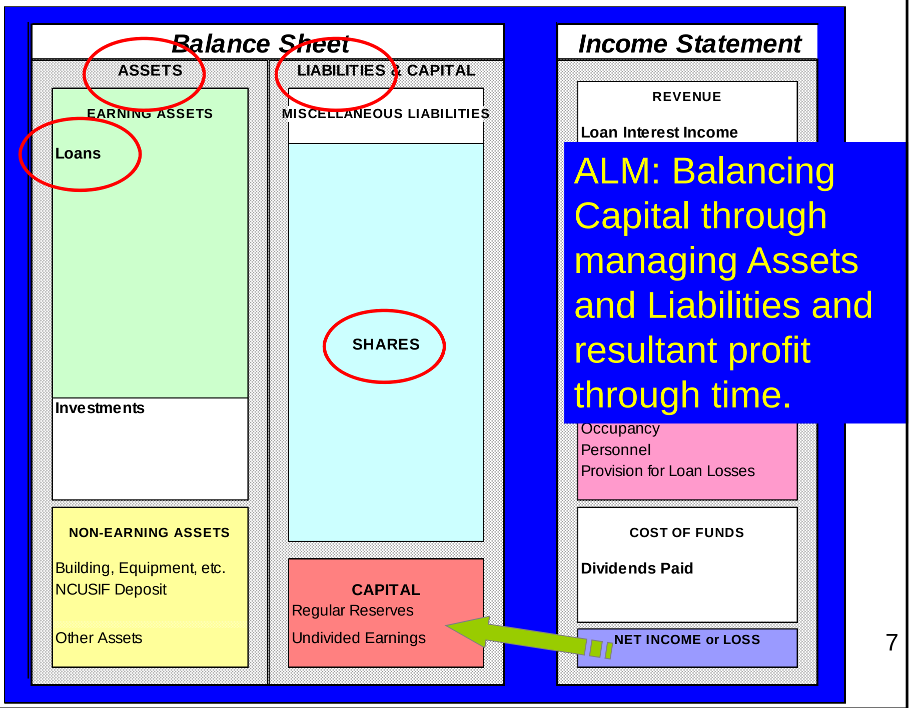

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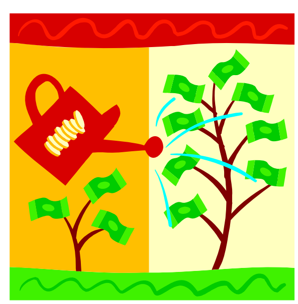
Why?

To consistently and reliably produce the right amount of profit.



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We need profit...

…to give us the capital we need

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Reasons for Capital?

1. Cushion against risk of future possible losses
2. Provide cushion for future growth and new products
3. Promote public confidence

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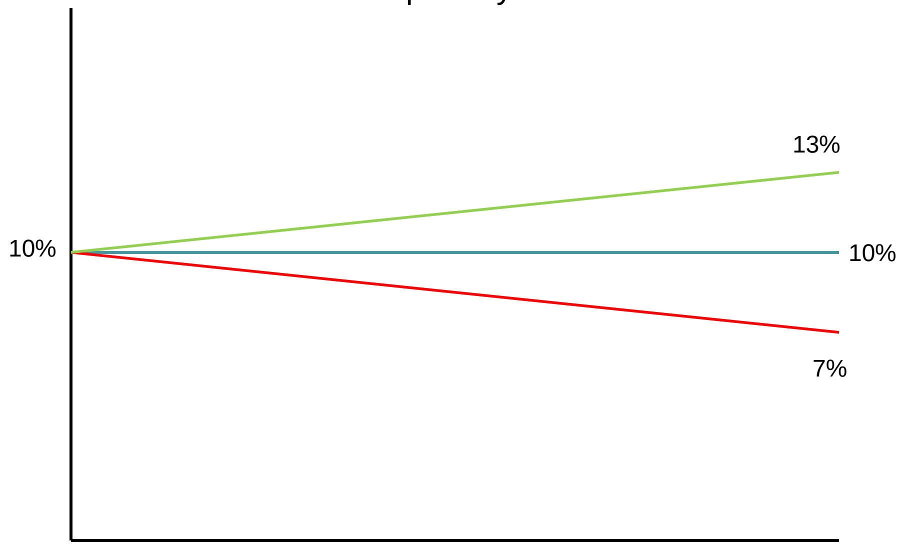
Look at Capital to Assets Ratio
Graphically over time



Are we in the business of eliminating risk?

NO! We're in the business of "Managing Risk."

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We manage risk by managing:

- Net Interest Margin (spread)
- Net income – Profit
- **Capital**

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Types of Risk

1. Interest Rate Risk: IRR
2. Credit Risk
3. Liquidity Risk
4. Transaction Risk
5. Compliance Risk
6. Strategic Risk
7. Reputation Risk
8. Concentration Risk
9. Growth Rate Risk

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Interest Rate Risk

The risk of loss due to rising or falling interest rates.

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Interest Rate Risk

Arises when a credit union's assets do not mature or re-price at the same interval as its liabilities

If interest rates change, you need to anticipate what will happen to:

- Net Interest Margin?
- Net Income?
- Capital?

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Interest Rate Risk

At time loan is made:

Loan rate	3.50%
Your COF at time of loan	0.50%
Spread	**3.00%**

2 years later, rates rise 220 bp:

Loan rate	3.50%
Your COF at present time	2.50%
Spread	**1.00%**

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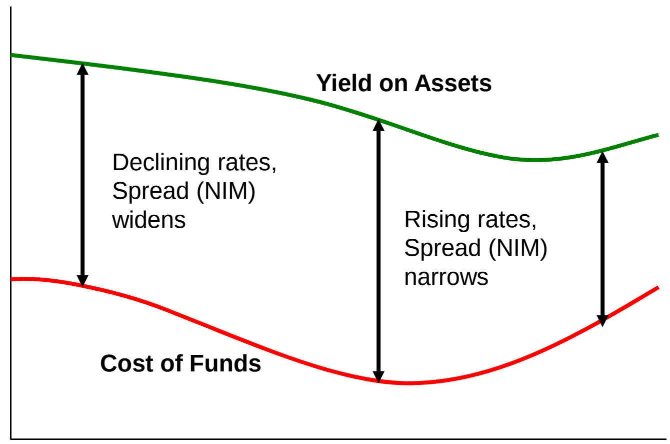
Interest Rate Risk

Spread Analysis	2017	2018	2019
Interest Income/Avg Assets	3.25%	3.35%	3.42%
Interest Expense/Avg Assets	0.40%	0.63%	0.81%
Net Interest Margin Spread	2.85%	2.72%	2.61%
PLL /Average Assets	0.34%	0.32%	0.40%
Operating Expenses	3.32%	3.29%	3.30%
Other Revenues	1.24%	1.25%	1.27%
Return on Average Assets	0.43%	0.36%	0.18%

As market rates rise, Deposit costs (Interest Expense) will probably rise faster than earnings from Loans and Investments (Interest Income). Causing stress on the bottom line (ROA)

Changing Spreads due to Changing Interest Rates



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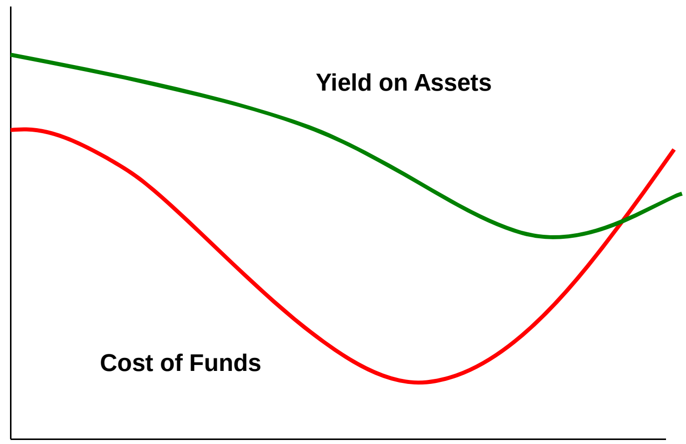
Interest Rate Risk: Cost of funds rises faster than Yield on Assets



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Causes of Interest Rate Risk

Lending

- Fixed rates over long term (eg. Mortgages)
- Changing interest rates
- Terms (life span) of fixed rate loans and shares don't match
- Adjustable rate loans:
  - ✓Floors, ceilings, re-pricing period

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Most Common Cause of Interest Rate Risk

Fixed Rate, Long-term Mortgages

Not all mortgages create the same IR risk. The following cause much less than traditional loans:

- Home equity loans
- HELOCs
- Short-term/balloon mortgages
- Adjustable rate mortgages

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Causes of Interest Rate Risk

Investments

- Fixed rates over long terms (eg. 10 yr CDs)
- Embedded options (subtle options that can trigger an unfavorable change in the terms of the investment)
- Marketability of investments
  - If we need to, can we sell it?

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Measuring Interest Rate Risk

Compare rate sensitivity of the credit union's earning assets to that of its interest-bearing liabilities

- Gap Analysis - Income Simulations
- Net Economic Value (NEV) Calculations

Computer simulations

Shock tests

✓Measuring effect on asset values if interest rates rise or fall 300 basis points

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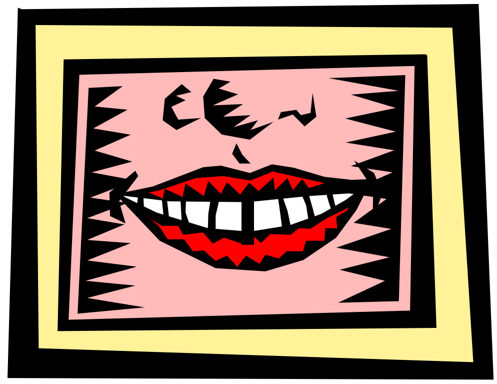
Gap Analysis

Gap is the difference between the amount of **Assets** and **Liabilities** re-pricing in a given period



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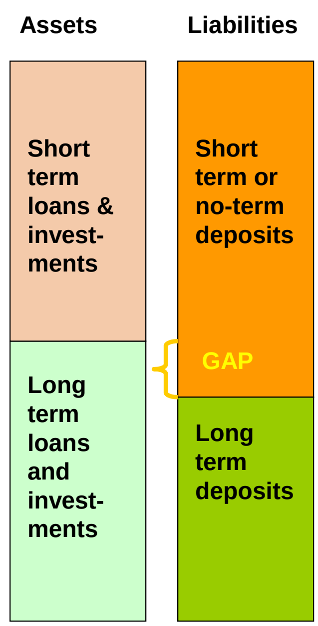
Gap Analysis

How items re-price



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What are short-term Assets?

Loans that turn back into cash soon..say 1 to 3 years

1. Most auto loans
2. Most unsecured loans
3. Credit card balances
4. Many business loans (often set with balloon)
5. Most ‘toy’ loans
    1. Boats, RVs, Motorcycles, ATVs, etc.
6. Many investments
    1. Short-term CDs
    2. Short-term Treasuries
    3. Short-term MBSs

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What are long-term Assets?

Loans that take longer to turn back into cash

1. 7, 12, 15, 30 year fixed rate mortgage loans
2. LT auto loans
3. LT unsecured loans
4. LT business loans (often set with balloon)
5. Investments with LT maturity
    1. LT CDs
    2. Some Mortgage Backed Securities (MBS)

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What are short-term Liabilities?

Deposits that reprice quickly. Non-term or short-term deposits

1. Checking accounts
2. Savings accounts
3. Money market accounts
4. Short-term CDs

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What are long-term Liabilities?

Term deposits. Deposits that don't reprice quickly

1. CD's
2. LT notes payable…though pretty rare

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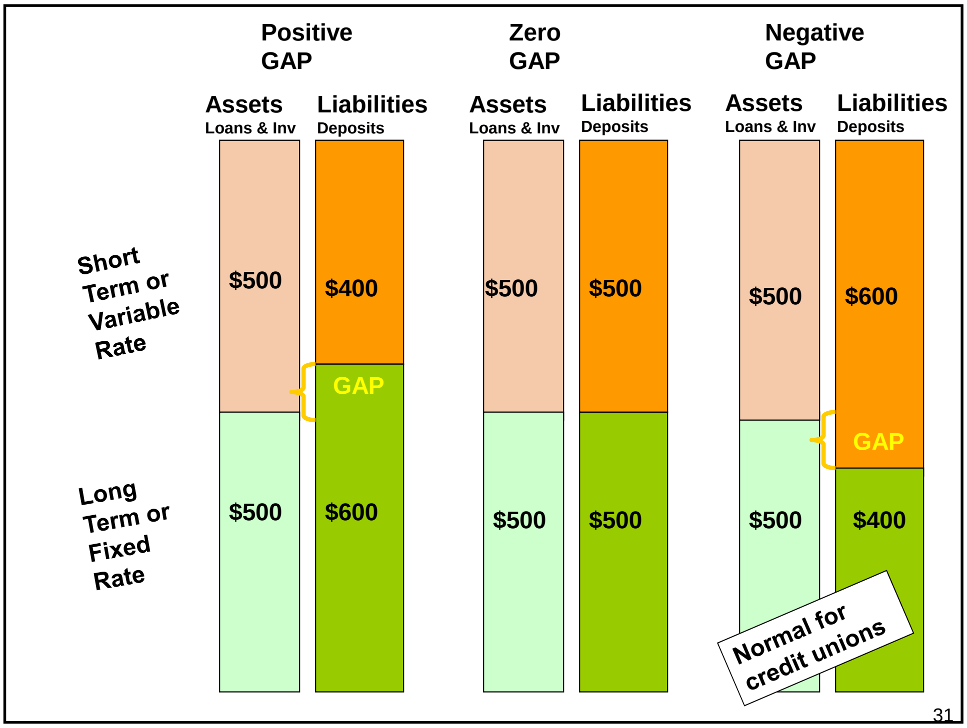

Gap can be good or bad…

…depending on the direction of interest rates.

Negative gap - more short-term deposits than short-term loans and investments

>Best with **declining rates**

Positive gap – more short-term loans and investments than short-term deposits

>Best with **rising rates**

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Effects of Gap on Profit

<u>Negative GAP</u> (normal for CUs) – Deposits reprice faster than Loans and Investments (cost of funds rise)

(more short-term deposits than short-term loans)

- in rising rate market, **unfavorable**
- in declining rate market, **favorable**

<u>Positive GAP</u> – Loans and Investments reprice faster than Deposits (more short term ASSETS than short term LIABILITIES)

- in rising rate market, **favorable**
- in declining rate market, **unfavorable**

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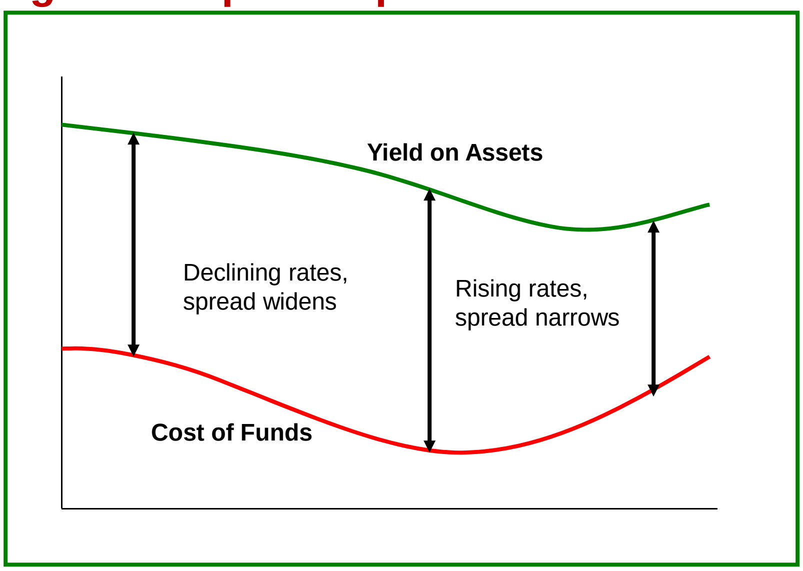
Normal Banking Cycle: Negative Gap and Spread



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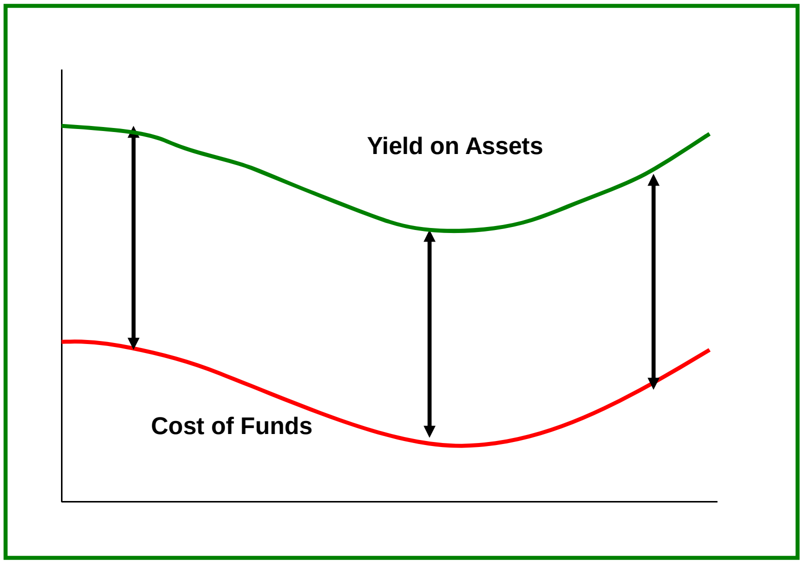
Perfect Credit Union



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Basic GAP Analysis

E.G. CU = $210,000,000 in Assets

Period of Maturities and Repayments			
Rate Sensitive Assets	Up to 12 Months	12 to 24 Months	24 to 36 Months
Cash	4,205,753	-	-
Investments	45,000,000	29,130,869	20,000,000
Loans	35,000,000	42,000,000	28,175,574
Total RSAs	84,205,753	71,130,869	48,175,574
Rate Sensitive Liabilities		(RSLs)	(RSLs)
Share Drafts	32,939,448		
Share Savings	105,835,236		
Money Markets	21,351,661		
IRAs	1,000,000	3,000,000	
Share Certificates	11,000,000	6,000,000	7,737,062
Total RSLs	172,126,345	9,000,000	7,737,062
GAP	(87,920,592)	62,130,869	40,438,512
Cumultative GAP	(87,920,592)	(25,789,723)	14,648,789

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Quantifying Effects of Gap

Multiply Gap percentage by anticipated interest rate change

$(87,920,592)/ $210,000,000 x 100 = (42)% Gap

Scenario: Rates expected to increase by ¼ point
(42)% x 25 bp = (0.11)% or 11 bp change.

ROA before	1.00%
bp change	0.11%
ROA after	0.89% or 89 bp

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Net Economic Value: Measuring Interest Rate Risk

Net economic value (NEV) measures the effect of interest rate risk on capital

NEV measures balance sheet's value at a future fixed point in time

NEV = "present value" of Assets - "present value" of Liabilities: The end result is the "present value" of Capital at some point in the future.

Book Value or Current Value:

Assets	-	Liabilities	=	Capital	Capital to Assets Ratio
$1,000	-	$ 900	=	$ 100	$100 / $1,000 = 10.0%

Future Value: (after a 3 % Pt. (300 bp) increase in market rates):

Assets	-	Liabilities	=	Capital	Capital to Assets Ratio
$ 940	-	$ 900	=	$ 40	$40 / $940 = 4.3%

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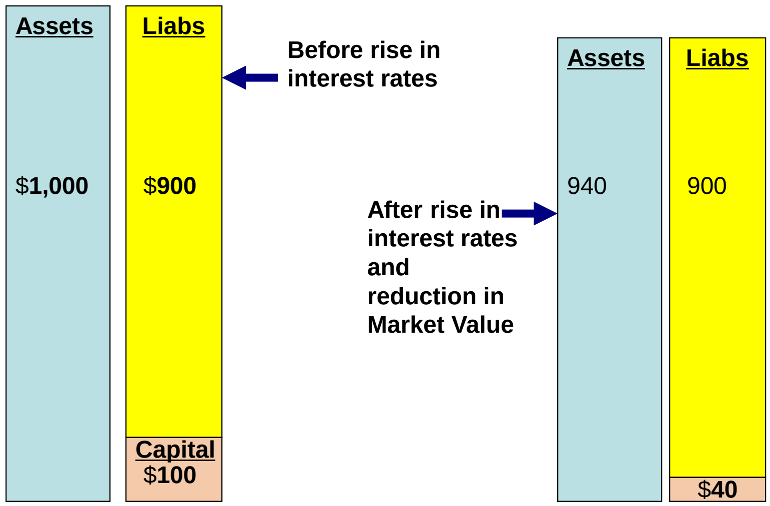
Net Economic Value:



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NCUA SHOCK TEST ***300 bp RISE IN INTEREST RATES***

BOOK NET WORTH				**$20,000,000**	
Other Reserves	$0				
Regular Reserves	$11,000,000				
Undivided Earnings	$9,000,000				
Net Income (not closed to U/E)	$0				Capital before shock test
Net Worth	**$20,000,000**				
Total Assets	**$225,000,000**				
BOOK NET WORTH RATIO				**8.89%**	
FIXED RATE REAL ESTATE LOANS	$37,000,000	17%	$6,290,000		
VARIABLE RATE REAL ESTATE LOANS	$17,000,000	4%	$680,000		
GROSS DEVALUATION			$6,970,000		
Net Worth (-) Real Estate Gross Devaluation			$13,030,000		
Loss on Securities After 300 bp Shock			$0		

Optional Security Loss Calculation

<1 Year	1-3 Years	3-10 Years	>10 Years	
$20,000,000	$40,000,000	$0	$0	($3,000,000)

Adjusted Net Worth	**$10,030,000**		
Total Assets (-) Real Estate Gross Devaluation	$218,030,000		
Total Assets (-) Real Estate & Investment Devaluation	$215,030,000		
NET WORTH RATIO WITH 17/4 R/E DEVALUATION		**5.98%**	Capital after shock test
NET WORTH RATIO WITH 17/4 R/E & INVESTMENT DEVALUATION		**4.66%**	
CHANGE FROM BOOK VALUE NET WORTH ($) AFTER 17/4 R/E &		**49.85%**	

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MANAGING NET INCOME
When interest rates rise

1. Limit additions to the fixed rate mortgage portfolio
2. Don’t overreact by slashing operating expenses
3. Maintain or encourage loan growth (will be key)
4. Raise rates paid on member savings slowly
5. Avoid extending investment maturities significantly
6. Manage investment portfolio for return as well as liquidity (don’t go out too far)
7. Plan for future interest rate scenarios: ALM software
8. Adjust your thinking to the new market order

ALM Policy

ALM policy should indicate how much interest rate risk the CUs balance sheet can accommodate in relation to its **capital** position.

- Each credit union should establish a prudent **capital exposure limit** and then routinely evaluate whether its interest rate risk exposure is within policy
- **Balance sheet limits** or **portfolio concentration limits** for loans and investments should be established

CUs should determine if it can remain **adequately capitalized** while holding its respective concentration of **fixed-rate mortgages or long-term investments** if interest rates increase suddenly by **300 basis points.**

ALM Policies and the Mortgage Portfolio

(1) Set firm and well thought out policy limits on the amount of Fixed Rate Mortgages to hold

(2) Write mortgage loans that conform to secondary market standards, even if the credit union intends to hold the loans in portfolio

- Any mortgage pricing strategy should be designed to offer the credit union substantial protection from interest-rate risk
- Retain the servicing of loans sold into the secondary market if volume is sufficient
- Hold only non-assumable mortgages (due-on-sale clauses)
- Use ALM program to monitor and model the effect of changing interest rates and liquidity positions on the credit union’s financial condition.
- Make ALM adjustments to reduce the credit union’s risk exposure
- Shorten the maturity of investments
- Lengthen the maturity of liabilities
- Maintain adequate liquidity for periods of low savings growth or high loan demand

ALM Red Flags Per NCUA

High level of long-term assets to total assets

The concern is a high concentration of assets with maturities longer than three years will reduce the credit union's ability to react to changing interest rates and expose it to increased interest-rate risk.

Declining net interest margin

Indicates either asset yields falling faster than the cost of funds or the cost of funds rising faster than asset yields. Address both IRR concerns and whether the credit union has any options to improve the Net Interest Margin (e.g., raising loan rates or lowering dividends) or increasing fee income as a temporary offset

ALM Red Flags Per NCUA

Low or declining capital (net worth)

A low level of net worth, or a level of net worth that is not keeping pace with share growth, weakens the credit union 's ability to absorb losses and react to changes.

Rapid share growth or above market dividends.

Share growth that outpaces the ability to generate sufficient net income reduces the overall strength of the credit union's net worth. Above market rates tend to attract less stable rate-sensitive shares. If the credit union then invests these sensitive deposits in longer-term assets (e.g. real-estate loans), it creates a mismatch of maturities for assets and liabilities that could further increase exposure to IRR.

Risk Based Lending Report

April 30, 200X

	THIS MONTH $ APPS	% APPS	$ APP'D & FUNDED	% APP'D & FUNDED	THIS MONTH # APPS	% APPS	# APP'D & FUNDED	% APP'D & FUNDED
A PAPER	$ 325,021	29.0%	$ 303,353	27.0%	15	22.7%	14	21.2%
B PAPER	$ 121,523	10.8%	$ 101,269	9.0%	6	9.1%	5	7.6%
C PAPER	$ 415,251	37.0%	$ 242,230	21.6%	24	36.4%	14	21.2%
D PAPER	$ 225,014	20.1%	$ 87,505	7.8%	18	27.3%	7	10.6%
E PAPER	$ 35,295	3.1%	$ -	0.0%	3	4.5%	0	0.0%
TOTAL	$ 1,122,104	100.0%	$ 734,357		66	100.0%	40	

	IN PORTFOLIO # LOANS	% No. of LOANS	$ LOANS	% Amt of LOANS	$ DELINQ	DELINQ %	$ Net CO	Net CO %
A PAPER	144	43.9%	$ 2,887,569	55.0%	10,565	0.37%	11,234	0.39%
B PAPER	66	19.9%	$ 1,312,531	25.0%	7,613	0.58%	8,987	0.62%
C PAPER	79	23.9%	$ 787,519	15.0%	9,844	1.25%	10,237	1.23%
D PAPER	26	7.9%	$ 168,004	3.2%	4,200	2.50%	5,876	3.41%
E PAPER	15	4.4%	$ 94,502	1.8%	4,253	4.50%	3,324	3.90%
TOTAL	329	100.0%	$ 5,250,125	100.0%	36,475	0.69%	39,658	0.71%

	Portfolio Yield		Loan Balance	Interest Income	Gross Yield	Admin Costs	% Net CO	Net Yield
A PAPER			$ 2,887,569	$ 74,788	2.59%	0.20%	0.39%	2.00%
B PAPER			$ 1,312,531	$ 64,183	4.89%	0.40%	0.62%	3.87%
C PAPER			$ 787,519	$ 57,016	7.24%	0.80%	1.23%	5.21%
D PAPER			$ 168,004	$ 15,708	9.35%	1.50%	3.41%	4.44%
E PAPER			$ 94,502	$ 14,156	14.98%	1.80%	3.90%	9.28%
TOTAL			$ 5,250,125	$ 225,852	4.30%		0.71%	

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Risk Based Pricing = Sharing

Credit Score	A	B	C	D
Loan Rate	2.5	3.6	5.3	7.9
Charge-offs	0.4	0.6	1.2	3.4
Admin costs	0.2	0.4	0.8	1.5
Dealer fee	0.3	0.3	0.3	0.3
Cost of funds	0.2	0.2	0.2	0.2
Anticipated net	1.4	2.1	2.8	2.5

Compare yield and term to alternative investments

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Marginal Cost of Funds

	BALANCES	COF	DIVIDENDS	BLENDED COF	Marginal COF Cost to attract new deposits
Share Drafts	$ 35,000,000	0.50%	175,000.00		
Shares	$ 55,000,000	1.50%	825,000.00		
CDs	$ 25,000,000	3.45%	862,500.00		
Total Shares	$ 115,000,000		$ 1,862,500	1.62%	
	Scenario 1- raise rate on Share Savings by 1%				
Share Drafts	$ 35,000,000	0.50%	175,000.00		
Shares	$ 58,000,000	2.50%	1,450,000.00		
CDs	$ 25,000,000	3.45%	862,500.00		
Total Shares	$ 118,000,000		$ 2,487,500	2.11%	
New Deposit	$ 3,000,000		$ 625,000		20.83%
	Scenario 2 - Special 4.45% rate on CD				
Share Drafts	$ 35,000,000	0.50%	175,000.00		
Shares	$ 55,000,000	1.50%	825,000.00		
CDs	$ 25,000,000	3.45%	862,500.00		
Special CD	$ 5,000,000	4.45%	222,500.00		
Total Shares	$ 120,000,000		$ 2,085,000	1.74%	
New Deposit	$ 5,000,000		$ 222,500		4.45%

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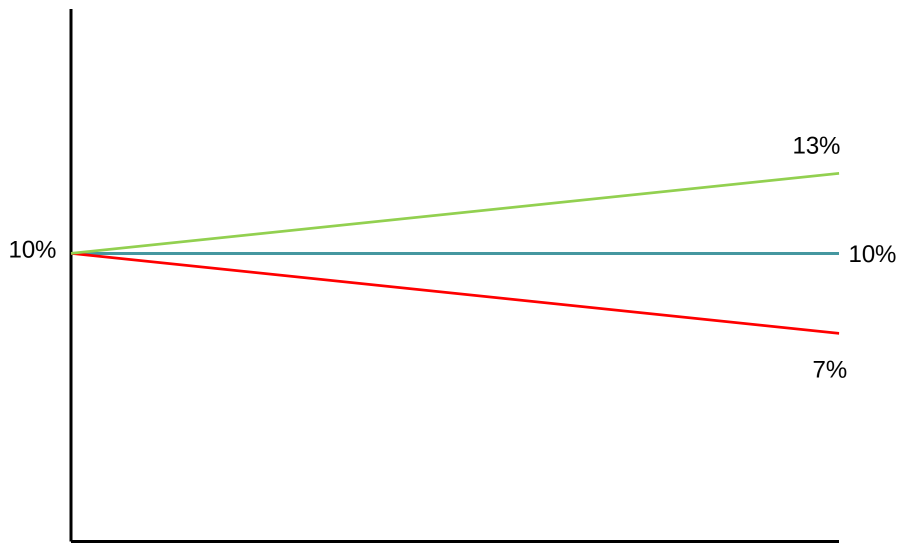
Remember, Watch that Capital to Assets Ratio Graphically over time



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