

ACUIA ANNUAL MEETING

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# Managing Interest Rate Risk: Setting Valid Limits







## Defining Risk

### What is Risk?

- Possibility of incurring loss
- Vulnerability to a negative outcome

# Defining Risk

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## Risk Categories

- Credit Risk – the risk of non-repayment where your credit union invests or loans funds.
- **Interest Rate Risk** – the risk that your credit union won't adequately manage changes in market rates to maintain an appropriate net interest margin.
- **Liquidity Risk** – the risk your credit union won't be able to liquidate assets quickly and with minimal loss in value to meet your obligations.
- Transaction Risk – the risk that fraud or errors will cause a loss to your credit union. This risk is a function of internal controls, information systems, employee integrity, and operating processes.
- Compliance Risk – the risk that failure to comply with laws and regulations, prudent ethical standards, and contractual obligations will harm your credit union.
- **Strategic Risk** – the risk that poor business decisions or improper implementation of strategic goals will reduce your credit union's earnings and net worth.
- Reputation Risk – the risk that your credit union's public image will be tarnished due to improper actions on the part of officials, management, or staff.

# Managing Risk

Types of loans

Terms of loans

Grades of loans

Sources of Funding

## Creating a Balanced Loan Portfolio

- High performing investment pools have a combination of long and short term investments
- The same is true of loan portfolios
- Short term loans decrease IRR and also decrease earnings



Over the past eight years, high credit tier loan rates have been kept at historically low rates that are irrational in comparison to costs.



### Survey of 75 credit unions

- 2010 average A+ loan rate was 4.62%
- 2013 average A+ loan rate is 2.01%



Drop of 2.61%

Tiered Pricing – Actual Effects

Credit Union	2013 Yield	2012 Yield	Change	Loan Balance	Interest Income Lost
1	5.57%	4.71%	-0.86%	\$129,714,000	(\$1,115,540.40)
2	7.28%	6.46%	-0.82%	\$26,910,000	(\$220,662.00)
3	7.54%	6.58%	-0.96%	\$10,888,000	(\$104,524.80)
4	7.43%	5.81%	-1.62%	\$79,484,000	(\$1,287,640.80)
5	6.45%	5.64%	-0.81%	\$18,933,000	(\$153,357.30)
6	8.16%	7.29%	-0.87%	\$199,438,374	(\$1,735,113.85)
7	5.76%	4.87%	-0.89%	\$182,550,000	(\$1,624,695.00)
8	6.29%	5.48%	-0.81%	\$136,821,000	(\$1,108,250.10)
9	6.28%	5.91%	-0.37%	\$18,448,000	(\$68,257.60)

## Short-Term Loan Impact

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# Equity and Risk

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Equity is the single source of risk offset for a credit union.

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That is why limits such as concentration, IRR and liquidity are measured as a percent of equity.

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Equity defines the amount of risk a credit union can take.

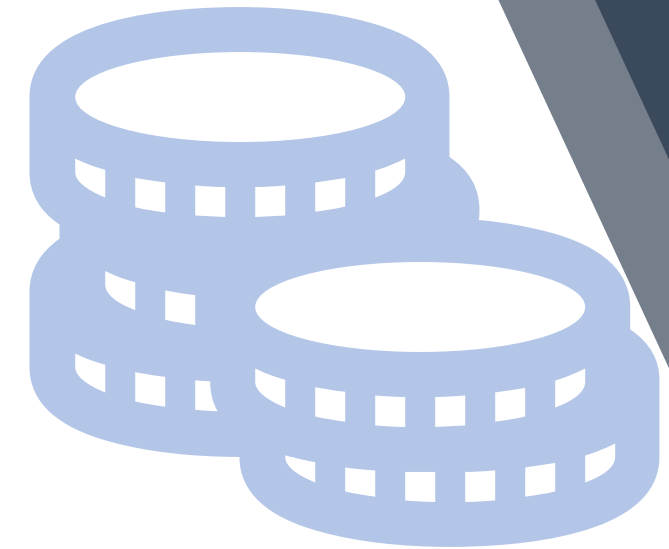
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More equity allows greater risk.



Risk presents a threat to the viability of the credit union. Two basic measures of credit union viability are:

- Net Interest Income
- Equity



Managing Risk

# Managing Risk

A man in a dark suit and tie is sitting in a black office chair. He has a laptop balanced on his head and is holding a tablet computer with both hands. He is looking upwards with a concerned expression. The background is a dark, stormy cityscape at night with lightning bolts striking the sky. The overall mood is one of high risk and uncertainty.

## Sources of NII

- Interest income
- Interest expense

## Source of Equity

- Earnings
- IRR exposure focuses on maintaining an adequate NET Margin or Net Interest Income level.

	Base Quarter	Q1	Q2	Q3	Q4
<b>Loan Yield</b>	5.50%	5.55%	5.60%	5.65%	5.70%
<b>Invest Yield</b>	1.00%	1.20%	1.40%	1.60%	1.80%
<b>Cost of Funds</b>	0.30%	0.80%	1.30%	1.80%	2.30%
<b>Loan Income</b>	\$ 275,000	\$ 277,500	\$ 280,000	\$ 282,500	\$ 285,000
<b>Invest Income</b>	\$ 37,500	\$ 45,000	\$ 52,500	\$ 60,000	\$ 67,500
<b>Dividends</b>	\$ 27,375	\$ 73,000	\$ 118,625	\$ 164,250	\$ 209,875
<b>NII</b>	\$ 285,125	\$ 249,500	\$ 213,875	\$ 178,250	\$ 142,625
<b>NII at Risk</b>		\$ (35,625)	\$ (35,625)	\$ (35,625)	\$ (35,625)
<b>% at Risk</b>		-12.49%	-14.28%	-16.66%	-19.99%

Impact from 2% Rate Shock

# Managing Risk

A commonly held guide is that NII should at a minimum equal your operating expenses

Ongoing contrast between current earnings and IRR

Loss of income resulting from IRR

Earnings from longer-term assets

ROA Calculation	2013	2014	2015	2016	2017
Interest from Loans	\$1,178,209	\$1,092,051	\$ 1,134,112	\$ 1,247,481	\$ 1,341,990
Income From Investments	\$261,426	\$265,011	\$ 206,433	\$ 169,553	\$ 79,452
Total Interest Income	\$1,439,635	\$1,357,062	\$ 1,340,545	\$ 1,417,034	\$ 1,421,442
Interest Expense	\$18,981	\$17,957	\$ 15,438	\$ 16,073	\$ 16,772
Net Margin	\$1,420,654	\$ 1,339,105	\$ 1,325,107	\$ 1,400,961	\$ 1,404,670
Other Income	\$453,187	\$ 443,326	\$ 493,781	\$ 484,131	\$ 487,208
Operating Expense	\$1,401,062	\$ 1,754,846	\$ 1,598,893	\$ 1,726,562	\$ 1,865,069
Net Profit	\$472,779	\$ 27,585	\$ 219,995	\$ 158,530	\$ 26,809

Managing Risk



ROA Calculation	2013	2014	2015	2016	2017
Interest from Loans	3.28%	3.04%	3.15%	3.47%	3.73%
Income From Investments	0.73%	0.74%	0.57%	0.47%	0.22%
Total Interest Income	4.00%	3.77%	3.73%	3.94%	3.95%
Interest Expense	0.05%	0.05%	0.04%	0.04%	0.05%
Net Margin	3.95%	3.72%	3.68%	3.89%	3.90%
Other Income	1.26%	1.23%	1.37%	1.35%	1.35%
Operating Expense	3.89%	4.88%	4.44%	4.80%	5.18%
ROA	1.31%	0.08%	0.61%	0.44%	0.07%

Managing Risk

# Managing Risk

With the common structure of credit union balance sheets the amortization of shorter term loans creates a recovery period in an increasing rate environment

## Average Yield on Loans

	Base Yr.	Year 1	Year 2	Year 3	Year 4	Year 5
5% Upshock	5.65%	7.78%	8.83%	9.29%	9.63%	9.94%
4% Upshock	5.65%	7.35%	8.19%	8.56%	8.84%	9.08%
3% Upshock	5.65%	6.93%	7.56%	7.83%	8.04%	8.23%
1% Upshock	5.65%	6.08%	6.29%	6.38%	6.45%	6.51%
-1% Downshock	5.65%	5.23%	5.02%	4.93%	4.86%	4.79%

# Managing Risk

To manage IRR we must first identify how much Interest Rate risk your credit union can support.

The basic measure of acceptable risk is tied to your equity.



# Managing Risk

Consider three credit unions

Actual equity	Minimum equity	Excess for risk
6.75%	6.00%	0.75%
9.35%	7.00%	2.35%
10.24%	8.00%	2.24%

# Managing Risk

A credit union will not want to apply all excess equity to IRR. Board and management will identify the credit union's appetite for risk.



A man in a dark suit and light-colored trousers stands on the left side of the frame, looking towards the right. The background is a dark, textured wall with several rectangular blocks and pieces of debris scattered across the floor, suggesting a state of disrepair or a hazardous environment. The overall lighting is dim and moody.

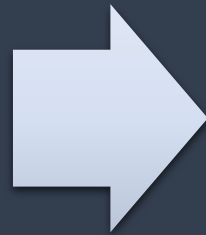
# Managing Risk

To operationalize the equity at risk we must convert it to the three measures

- NII at risk
- Equity at Risk
- Minimum Equity

# Managing Risk

Steps to operationalize the measure involves setting a limit for each measure



This measure is based on the identified equity at risk

# Managing Risk

## STEP 1

Identify the amount of equity the credit union will put at risk in IRR

Current Equity amount and equity ratio

Amount of equity to place at risk (based on equity ratio)

Leads to minimum equity ratio limit and amount of equity at risk

Note: this does mean you will automatically lose this money on the bottom line. It provides a proxy for setting a max for NII shrinkage.

# Managing Risk

## STEP 2

Apply the equity figure to the current NII



Divide the equity available for risk by the current NII



This shows the total amount to risk



Remember we talked about an adjustment period for reestablishing NII



# Managing Risk

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## STEP 2 (Continued)

This can be one or more years. The maximum time for healthy IRR exposure is 3 years.

Each year will not have the same NII at risk

The next slide shows this variation

We need to allow equity at risk to be apply over the three-year period but not equally



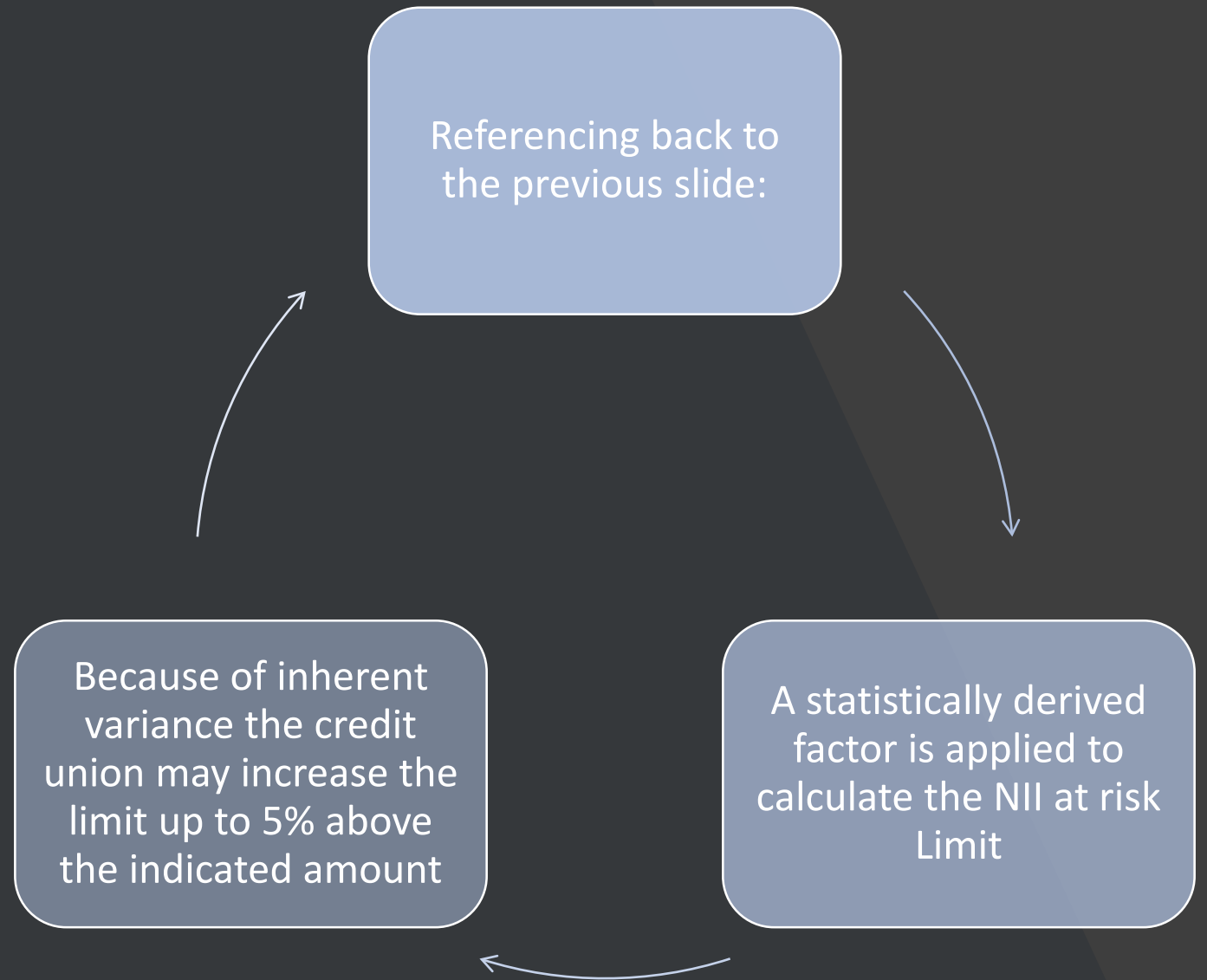


# Net Interest Income at Risk

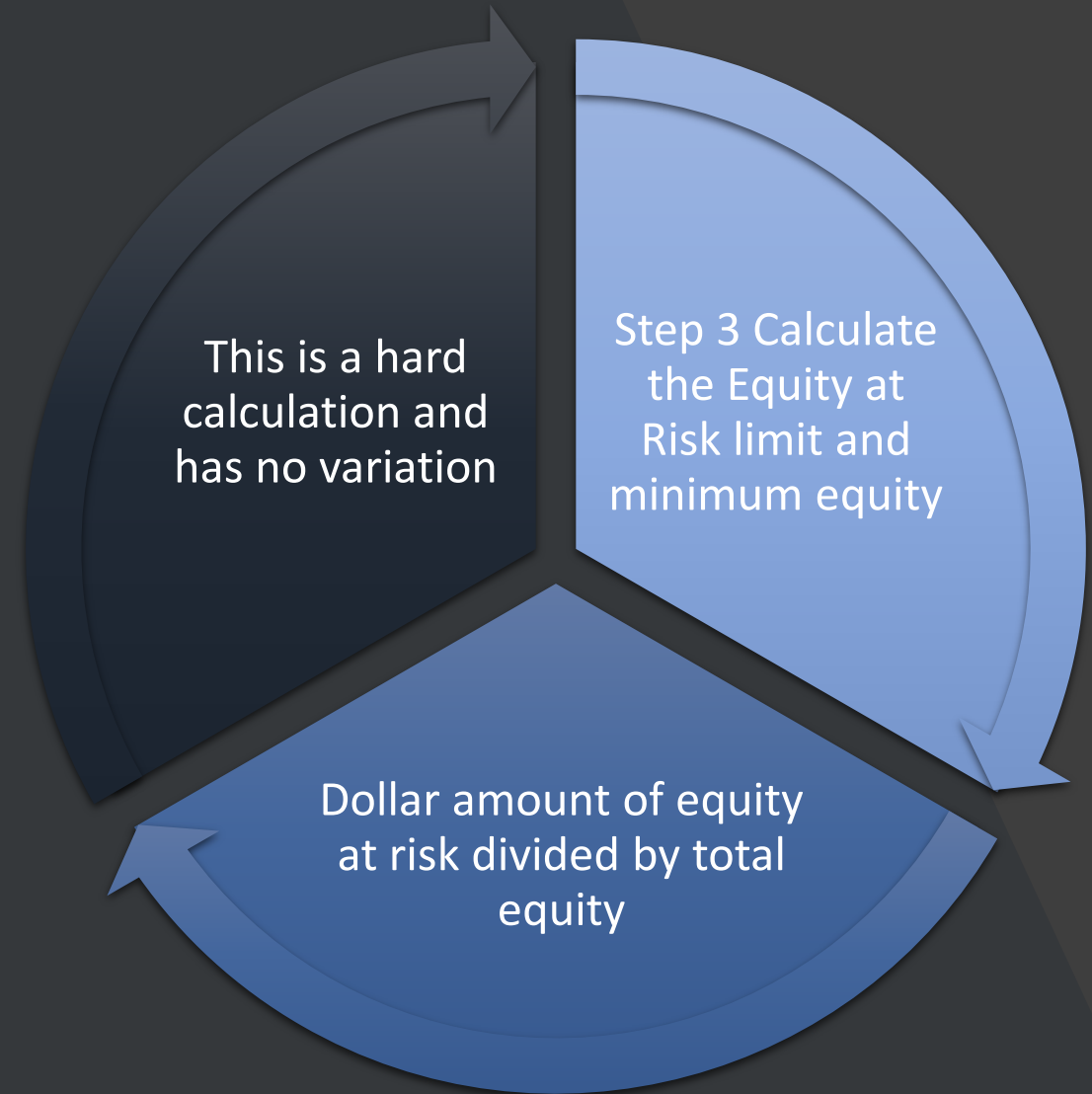
Net Interest Margin						
	Base Yr.	Year 1	Year 2	Year 3	Year 4	Year 5
<b>5.00% Upshock</b>	\$ 748,670.76	\$ 451,211.87	\$ 363,692.43	\$ 569,129.11	\$ 728,973.39	\$ 883,246.14
<b>4.00% Upshock</b>	\$ 748,670.76	\$ 512,958.40	\$ 446,056.52	\$ 612,482.61	\$ 740,461.72	\$ 861,621.81
<b>3.00% Upshock</b>	\$ 748,670.76	\$ 573,114.52	\$ 524,606.68	\$ 650,438.59	\$ 746,186.99	\$ 836,265.61
<b>1.00% Upshock</b>	\$ 748,670.76	\$ 691,189.29	\$ 676,429.37	\$ 719,014.71	\$ 750,618.42	\$ 780,302.99
<b>-1.00% Downshock</b>	\$ 748,670.76	\$ 772,500.34	\$ 742,262.80	\$ 697,611.97	\$ 666,806.57	\$ 636,826.09

Net Interest Margin Percent Change						
	Base Yr.	Year 1	Year 2	Year 3	Year 4	Year 5
<b>5.00% Upshock</b>	0.00%	-39.73%	-51.42%	-23.98%	-2.63%	17.98%
<b>4.00% Upshock</b>	0.00%	-31.48%	-40.42%	-18.19%	-1.10%	15.09%
<b>3.00% Upshock</b>	0.00%	-23.45%	-29.93%	-13.12%	-0.33%	11.70%
<b>1.00% Upshock</b>	0.00%	-7.68%	-9.65%	-3.96%	0.26%	4.23%
<b>-1.00% Downshock</b>	0.00%	3.18%	-0.86%	-6.82%	-10.93%	-14.94%

# Managing Risk



# Managing Risk



# Managing Risk

With the limits in place, simulations can be run to identify the risk resulting from distinct product offerings.

# Managing Risk

A man in a dark suit and tie is shown from the chest up, pointing his right hand forward. The image has a blue tint and is overlaid with a white circuit board pattern consisting of lines and small circles. A large, semi-transparent white circle is on the left side of the image, containing the text.

In the next section, we will use these limits to determine the advisability of making changes to the credit union.



FOR MORE INFORMATION OR TO SCHEDULE A DEMO

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