Evaluating Risk/Return Trade-offs When Margins Are Razor Thin

By c. myers corporation

It is no secret that decisions today are more complex and far-reaching than ever before, and margins are razor thin. Traditional and non-traditional competitors on the battlefield keep multiplying and plotting to get more of consumers' business, all while credit unions have to throw resources toward protecting their flank from attacks such as the CFPB, CECL, NCUA's NEV test, and RBC.

This c. notes outlines advanced approaches to evaluating risk/return trade-offs so that decision-makers can have actionable business intelligence at their fingertips.

The following highlights a real-life example of how a credit union evaluated risk/return trade-offs and the learnings of how to make the process significantly more efficient, while providing superior decision information. While this example focuses on reducing risk, the same powerful process and tools can be used to evaluate options for increasing earnings.

In Table 1, the credit union's risk snapshot is as follows:

Table 1

EARNINGS	
Beginning Position ROA	1.08
First Negative ROA: Short-term rates at…	3%
NET WORTH RATIO	
Beginning Position Net Worth	10.20
Long-Term Net Worth Not At Risk (0505)	7.69
Falls Below Well Capitalized:	
Short-term rates at…	6%
NET ECONOMIC VALUE (SHARES AT PAR)	
Volatility +300	(89.95%)
NEV Ratio +300	1.06%

In this table, assume that the NEV volatility causes the most heartburn for decision-makers. They ask themselves, what would it take to reduce the NEV volatility from 89.95% to 50%? Note that this target is for example purposes and each credit union should decide on a level of risk that fits their business model and their own risk appetite.

Decisions Based on Value Volatility

This credit union started by taking a traditional approach to reducing interest rate risk. They sorted by economic value volatility in a +300 rate environment, ranking the volatility largest to smallest, for loans and investments. Table 2 displays a subset of the results. It shows that CMOs – Fxd, MBS – Fxd, and 1st Mortgages – Fxd have the greatest market value risk if rates were to rise.

The credit union then tested eliminating their positions in CMOs – Fxd, MBS – Fxd, and a large portion of the 1st Mortgages – Fxd in order to get the economic value volatility below 50%.

Table 2

Economic Value Volatility Sorted By Largest Decline

Rank	Category Name	Current Book ($000s)	+300 Value Change ($000s)	+300 Value Change %
1	CMO - Fxd	3,254	-815	-25.0%
2	MBS - Fxd	30,600	-5,470	-17.9%
3	1st Mortgages - Fxd	158,895	-27,791	-17.5%
4	MBL Real Estate - Fxd	9,618	-1,652	-17.2%
5	Callable Step Up	10,185	-1,136	-11.2%
6	Callable Bond	63,655	-6,982	-11.0%
7	Home Equity - Fxd	83,273	-8,473	-10.2%
8	MBS ARMs	9,813	-535	-5.5%
9	RV - Fxd	35,193	-1,765	-5.0%
10	MBL Vehicle - Fxd	2,405	-114	-4.7%

As shown below, if the credit union took these actions, the NEV volatility would drop below 50%. Results show the original base case on the bottom half of the report, and the What-If scenario on the top.

Table 3—Solution 1

Net Economic Value (+-300)

Case 151B, Existing Commitments, Solution 1: Sell CMOs, MBS P/T, Mortgage Loans, $ in Thousands
Scenario Representing Current Market Rates = 0002
Net Worth $65,838 = 10.0%, Established Minimum Net Worth $46,092 = 7.0%

	Interest Rate Scenario	NEV	$ Change	% Change	NEV %
Solution 1: Sell CMOs, MBS P/T, Mortgage Loans					
Current	**0002**	62,926			9.59%
+100	**0103**	52,605	(10,321)	(16.40%)	8.17%
+200	**0204**	42,256	(20,669)	(32.85%)	6.69%
+300	**0305**	31,524	(31,402)	(49.90%)	5.09%
Base Case: NEV Shares at Par					
Current	**0002**	62,926			9.59%
+100	**0103**	44,878	(18,048)	(28.68%)	7.05%
+200	**0204**	26,330	(36,596)	(58.16%)	4.28%
+300	**0305**	6,327	(56,599)	(89.95%)	1.06%

NEV Does Not Show the Impact to Earnings

The NEV would show that this decision is a "no brainer." Note in the results above that the NEV in the current rate environment is unchanged after the restructuring.

What would this tell decision-makers and examiners? It would show that the credit union is no worse off today for selling higher-yielding, long-term, fixed-rate assets and actually has less interest rate risk. In essence, there appears to be no downside to this decision.

However, remember that NEV does not show risk vs. return trade-offs nor, more importantly, the profitability profile in current or alternate rate environments. *Earnings matter* so decision-makers and examiners need to take it a step further.

When evaluating the risk/return trade-offs of different decisions, it is critical that credit unions run these scenarios through a robust A/LM model capable of helping decision-makers understand the impact to profitability over the long run, covering a wide range of rates and yield curves.

While the NEV may suggest this course of action would benefit the credit union without any harm in the current environment, decision-makers should be feeling some anxiety at this point when considering how much potential yield would be sacrificed. While the credit union achieved its goal with respect to NEV, how much was given up in earnings potential?

Table 4—Solution 1

Risk Snapshot Comparison - Over 4 Years

Case 151B, Solution 1: Sell CMOs, MBS P/T, Mortgage Loans, $ in Thousands
Scenario Representing Current Market Rates = 0002, Rates Change Over 12 Months
Net Worth $65,838 = 10.0%, Established Minimum Net Worth $46,092 = 7.0%

	Before	After	Difference
KEY INFORMATION			
Decision Model Case Name			
Before	Base Case		
After	Solution 1: Sell CMOs, MBS P/T, Mortgage Loans		
Current Scenario	0002	0002	
EARNINGS			
Beginning Position ROA	1.08	0.47	(0.61)
First Negative ROA: Short-term rates at...	3%	2%	-1%
NET WORTH RATIO			
Beginning Position Net Worth	10.20	10.00	(0.20)
Long-Term Net Worth At Risk (0505)	2.51	1.81	(0.69)
Long-Term Net Worth Not At Risk (0505)	7.69	8.19	0.49
Falls Below Established Minimum			
Short-term rates at...	6%	7%	1%
Falls Below Well Capitalized:			
Short-term rates at...	6%	7%	1%

-$4.0M/yr NI on a $660M CU

In Table 4, the return on assets (ROA) drops from 108 bps to 47 bps. That ROA reduction of 61 bps works out to about $4 million per year in bottom-line earnings for this credit union. Consider what the credit union could do for members and employees with an extra $4 million per year in earnings.

Ironically, because the credit union gave up so much in earnings, it is in a position to actually lose money sooner than before it restructured the balance sheet and, the net worth ratio has dropped 20 bps because losses on assets were actually realized. If rates rise far enough, there is less net worth put at risk with the new structure. However, for every basis point of risk reduction as rates rise, there is almost 1 bp of earnings given up today (69 bps less Long-Term Net Worth at Risk for 61 bps less ROA). In looking at these results, decision-makers should ask themselves whether this is a good trade-off.

Decisions Based on Value Volatility Relative to Earnings

What else should be included? Economic value can still be a component of the solution; however, the decision information improves when calculating value volatility against the yield. Rather than just focusing on a view of risk, the risk/return relationship can be expressed by dividing the +300 value volatility by the yield.

Table 5 builds on Table 2 by showing the yield next to the volatility along with a column that relates the volatility to the return (below).

Table 5

Economic Value Volatility
Risk vs. Return

		Current Book	Current Yield	+300 Value Change		Risk vs.
Rank	Category Name	($000s)	%	($000s)	%	Return
1	CMO – Fxd	3,254	1.75	-815	-25.0%	-14.3%
2	MBS – Fxd	30,600	1.74	-5,470	-17.9%	-10.3%
3	1st Mortgages – Fxd	158,895	4.36	-27,791	-17.5%	-4.0%
4	MBL Real Estate – Fxd	9,618	4.25	-1,652	-17.2%	-4.0%
5	Callable Step Up	10,185	1.25	-1,136	-11.2%	-8.9%
6	Callable Bond	63,655	1.35	-6,982	-11.0%	-8.1%
7	Home Equity – Fxd	83,273	5.42	-8,473	-10.2%	-1.9%
8	MBS ARMs	9,813	1.18	-535	-5.5%	-4.6%
9	RV – Fxd	35,193	6.23	-1,765	-5.0%	-0.8%
10	MBL Vehicle - Fxd	2,405	5.13	-114	-4.7%	-0.9%

Viewing the risk this way means that the 1st Mortgages – Fxd devalue by about 4% for every 100 bps of yield. MBS – Fxd devalue by 10.3% for every 100 bps of yield.

If you look at it from a risk relative to return perspective, how might that change the categories you target when trying to reduce risk?

When the focus was just on value, regardless of return, the CMOs – Fxd, MBS – Fxd, and 1st Mortgages – Fxd were the primary targets. However, when you re-sort by the risk vs. return, other categories, such as Callable Bonds and Callable Step Ups, move toward the top.

From a risk relative to return perspective, the callables are actually more concerning than the fixed mortgages. Solution 2 reruns the scenario focusing on the MBS – Fxd, CMOs – Fxd, the Callable Bonds and Callable Step Ups, with just a small reduction in 1st Mortgages – Fxd (see Table 6).

Table 6—Solution 2

Net Economic Value (+-300)

Case 151B, Existing Commitments, Solution 2: Sell Assets Based on Risk/Return, $ in Thousands
Scenario Representing Current Market Rates = 0002
Net Worth $66,183 = 10.0%, Established Minimum Net Worth $46,116 = 7.0%

	Interest Rate Scenario	NEV	$ Change	% Change	NEV %
Solution 2: Sell Assets Based on Risk/Return					
Current	**0002**	62,926			9.59%
+100	**0103**	52,826	(10,100)	(16.05%)	8.20%
+200	**0204**	42,418	(20,508)	(32.59%)	6.71%
+300	**0305**	31,511	(31,416)	(49.92%)	5.09%
Base Case: NEV Shares at Par					
Current	**0002**	62,926			9.59%
+100	**0103**	44,878	(18,048)	(28.68%)	7.05%
+200	**0204**	26,330	(36,596)	(58.16%)	4.28%
+300	**0305**	6,327	(56,599)	(89.95%)	1.06%

Just like Solution 1, the NEV does not change in the current environment, showing no downside to taking this action. Solution 2 also solved for the +300 bp rate environment (materially less value risk). But what about earnings?

Table 7—Solution 2

Risk Snapshot Comparison - Over 4 Years

Case 151B, Solution 2: Sell Assets Based on Risk/Return, $ in Thousands
Scenario Representing Current Market Rates = 0002, Rates Change Over 12 Months
Net Worth $66,183 = 10.0%, Established Minimum Net Worth $46,116 = 7.0%

		Before	After	Difference
KEY INFORMATION				
Decision Model Case Name				
Before	Base Case			
After	Solution 2: Sell Assets Based on Risk/Return			
Current Scenario		**0002**	**0002**	
EARNINGS				
Beginning Position ROA		1.08	0.60	(0.48)
First Negative ROA: Short-term rates at...		3%	7%	4%
NET WORTH RATIO				
Beginning Position Net Worth		10.20	10.05	(0.16)
Long-Term Net Worth At Risk (0505)		2.51	0.28	(2.23)
Long-Term Net Worth Not At Risk (0505)		7.69	9.77	2.07
Falls Below Established Minimum				
Short-term rates at...		6%	11%	5%
Falls Below Well Capitalized:				
Short-term rates at...		6%	11%	5%

-$3.2M/yr NI on a $660M CU

Table 7 shows the credit union is still giving up earnings though not as much as Solution 1. Further, the financial structure would now be positioned to not lose money until rates increase 700 bps. The beginning net worth ratio decreases as losses on sales are realized. However, there is a significant reduction in Long-Term Net Worth At Risk.

Compared to Solution 1, the overall risk and return trade-off is much more favorable. Consider that Solution 2 results in 223 bps improvement in net worth at risk, while giving up 48 bps of earnings. In this scenario, for every 5 bps reduction in risk, the credit union would give up about 1 bp of earnings today.

Despite having a better risk reduction to ROA impact (5 to 1 in Solution 2 versus 1 to 1 in Solution 1), it is important to reiterate that Solution 2 still sacrifices a lot of earnings if rates stay low.

Table 8 provides some additional comparisons between Solutions 1 and 2.

Table 8

Comparison

Evaluating Risk/Return Trade-Offs Of Risk Mitigation Tools

	Base	Solution 1 +300 NEV Largest Losses	Solution 2 Risk vs. Return Yld vs +300 Value
EARNINGS			
Beginning Position ROA	1.08	0.47	0.60
First Negative ROA: Short-term rates at…	3%	2%	7%
NET WORTH RATIO			
Beginning Position Net Worth	10.20	10.00	10.05
Long-Term Net Worth Not At Risk (0505)	7.69	8.19	9.77
Falls Below Well Capitalized:			
Short-term rates at…	6%	7%	11%
NET ECONOMIC VALUE (SHARES AT PAR)			
Volatility +300	(89.95%)	(49.90%)	(49.92%)
NEV Ratio +300	1.06%	5.09%	5.09%

Overall, the credit union would be much better off with Solution 2.

If your credit union is told to reduce risk, or if you believe your credit union needs to reduce risk, don't just stop at Solution 1. Make sure the short- and long-term impact to ROA in the current and alternate environments is factored into these decisions, not just the impact of market value.

Earnings Risk/Return View – The Bottom Line Matters

The decision driver in Solution 1 was to address the NEV volatility. Solution 2 took that a step further and evaluated the value volatility relative to the return. Solution 3 takes an alternative approach and asks the question: **What if your decision drivers were based on making solid earnings right now, while still being able to make money if rates change within a reasonable range?**

Strategy Levers

Yield on Assets
- Cost of Funds
= Net Interest Margin

- Operating Expense
- Provision for Loan Loss
+ Fee/Other Income

= **Return on Assets (ROA)**

Understanding bottom-line earnings in the current and alternate rate environments is no longer optional. All strategic decisions and initiatives depend on earnings power and, ultimately, optimizing net worth. Nearly every decision made impacts one or more of the strategy levers.

Using actual bottom-line profitability as a decision filter can help decision-makers understand how much current earnings could be impacted, how profitability in different rate environments could change, and the breakeven point. Understanding the breakeven point is critical, but is often ignored.

Table 9 identifies the categories that have the most volatility from an earnings perspective. This table relates the impact of the Net Income Volatility (NI Volatility) to the size of the asset. It also compares that volatility (aka Earnings Risk) to the current Return. See the table below:

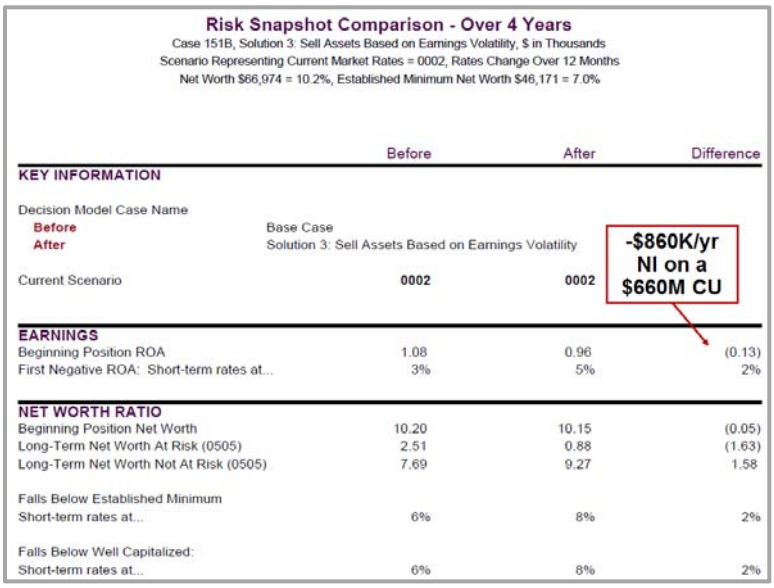
Table 9

Earnings Volatility Risk vs. Return

			+300 Change		
Category Name	($000s)	Current Yield %	NI Volatility	% NI Impact vs Assets	Earn Risk vs Return
Callable Step Up	10,185	1.25%	-727	-335%	-571%
Callable Bond	63,655	1.35%	-3,192	-236%	-371%
CMO - Fxd	3,254	1.75%	-160	-231%	-281%
MBS - Fxd	30,600	1.74%	-962	-148%	-181%
Investment CDs - Fxd	7,639	0.83%	-99	-61%	-155%
MBL Real Estate - Fxd	9,618	4.25%	-321	-157%	-78%
1st Mortgages - Fxd	158,895	4.36%	-5,233	-155%	-76%
Home Equity - Fxd	83,273	5.42%	-1,916	-108%	-42%
MBL Vehicle - Fxd	2,405	5.13%	-39	-76%	-32%
RV - Fxd	35,193	6.23%	-640	-85%	-29%
New Autos - Fxd	58,282	4.58%	-751	-61%	-28%
Used Autos - Fxd	90,127	4.98%	-1,164	-61%	-26%
Share/CD Secured - Fxd	11,812	3.02%	-79	-31%	-22%
Credit Card - Fxd	11,241	10.43%	-145	-61%	-12%
Signature - Fxd	4,260	13.30%	-29	-32%	-5%
HELOC - Var	13,317	3.25%	382	135%	
Overnights	34,730	0.25%	954	129%	
MBS ARMs	9,813	1.18%	79	38%	

If decisions are filtered using this view, Solution 3 reveals the following results:

Table 10—Solution 3



Risk Snapshot Comparison - Over 4 Years

Case 151B, Solution 3: Sell Assets Based on Earnings Volatility, $ in Thousands
Scenario Representing Current Market Rates = 0002, Rates Change Over 12 Months
Net Worth $66,974 = 10.2%, Established Minimum Net Worth $46,171 = 7.0%

	Before	After	Difference
KEY INFORMATION			
Decision Model Case Name			
Before	Base Case		
After	Solution 3: Sell Assets Based on Earnings Volatility		
Current Scenario	0002	0002	
EARNINGS			
Beginning Position ROA	1.08	0.96	(0.13)
First Negative ROA: Short-term rates at...	3%	5%	2%
NET WORTH RATIO			
Beginning Position Net Worth	10.20	10.15	(0.05)
Long-Term Net Worth At Risk (0505)	2.51	0.88	(1.63)
Long-Term Net Worth Not At Risk (0505)	7.69	9.27	1.58
Falls Below Established Minimum			
Short-term rates at...	6%	8%	2%
Falls Below Well Capitalized:			
Short-term rates at...	6%	8%	2%

By evaluating risk through the earnings window, the credit union would still give up some earnings in the current rate environment; 13 bps in this example. That's still a sacrifice, giving up roughly $860K in earnings today.

However, the credit union would still make almost a 1% ROA, while the first negative ROA moves from 3% to 5% short-term rates. From a net worth standpoint, the credit union reduced Long-Term Net Worth at Risk by 163 bps. For every basis point of earnings given up, the credit union would reduce Long-Term Net Worth at Risk by ~12 bps. So Solution 3 has a risk reduction to ROA impact of 12 to 1.

Tables 11 and 12 compare the three solutions outlined above.

Table 11 **Net Worth at Risk Reduction vs Current ROA Reduction**

Potential Action	NW at Risk Reduction (bps)	Current ROA Reduction (bps)
Solution 1	1	1
Solution 2	5	1
Solution 3	12	1

Table 12

Comparison

Evaluating Risk/Return Trade-Offs
Of Risk Mitigation Tools

	Base	Solution 1 +300 NEV Largest Losses	Solution 2 Risk vs. Return Yld vs +300 Value	Solution 3 Earnings Volatility +300
EARNINGS				
Beginning Position ROA	1.08	0.47	0.60	0.96
First Negative ROA: Short-term rates at…	3%	2%	7%	5%
NET WORTH RATIO				
Beginning Position Net Worth	10.20	10.00	10.05	10.15
Long-Term Net Worth Not At Risk (0505)	7.69	8.19	9.77	9.27
Falls Below Well Capitalized:				
Short-term rates at…	6%	7%	11%	8%
NET ECONOMIC VALUE (SHARES AT PAR)				
Volatility +300	(89.95%)	(49.90%)	(49.92%)	(75.79%)
NEV Ratio +300	1.06%	5.09%	5.09%	2.53%

In comparing these different solutions, it becomes clear that Solution 1, which is based on economic value, sacrifices the most from an overall profitability and risk to net worth perspective. Note that Solution 3 evaluates the decision based on earnings volatility and does not solve for the 50% volatility in the economic value. However, from a long-term profitability perspective, the credit union gives up far less in earnings while still maintaining a solid risk profile.

When asked what they would choose, people are often evenly split between Solution 2 and Solution 3, depending on their personal appetite for risk and decision-drivers. Solution 1 is never selected.

Moving Forward

As you evaluate your profitability profile, risk profile, and trade-offs of various options, it is beneficial to have a meaningful discussion with key stakeholders to determine the primary decision drivers that will be used. As hard as it may be, ranking decision drivers is an invaluable component and helps bring more clarity to the decision-making process.

It is also important to make sure that appropriate tools are in place to evaluate complex decisions. **While the solutions focus on reducing risk, the same powerful process and tools can be used to evaluate options for increasing earnings.**

There is no one right set of decisions but the impact of the trade-offs can be significant. Make sure decision-makers are fully informed before making decisions about material changes to the financial structure. It is equally important to make sure that all of the factors that impact profitability are included.

If you would like to learn more, or if you have questions, please contact us at 800.238.7475.

About c. myers

We have partnered with credit unions since 1991. Our philosophy is based on helping our clients ask the right, and often tough, questions in order to create a solid foundation that links strategy and desired financial performance.

We have the experience of working with over 550 credit unions, including 50% of those over $1 billion in assets and about 25% over $100 million providing A/LM, interest rate risk and budgeting services, and facilitating more than 100 strategic planning, process improvement, and project management engagements each year.