

ALM for Boards

Frank Santucci

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Frank Santucci - Managing Director
Stifel, Nicolaus & Company / Balance Sheet Management Services (BSMS)

Frank has been working with institutional investors including credit unions, banks, insurance companies and municipalities for over 40 years. Frank is the principal author of Stifel's BSMS ALM model which has been used to measure monitor and manage interest rate risk by over 1,000 institutions ranging in size from $10 million to $18 billion in total assets. Along with his team, they provide comprehensive ALM analysis, ALCO and board education, budget and strategic planning support and consultation.

Frank currently holds the Financial Industry Regulatory Authority: Series 7 license (General Securities Registered Representative); the Series 63 license, (State Registrations) and the Series 24 license, (General Securities Principal). Frank is also an Eagle Scout in the Boy Scouts of America.

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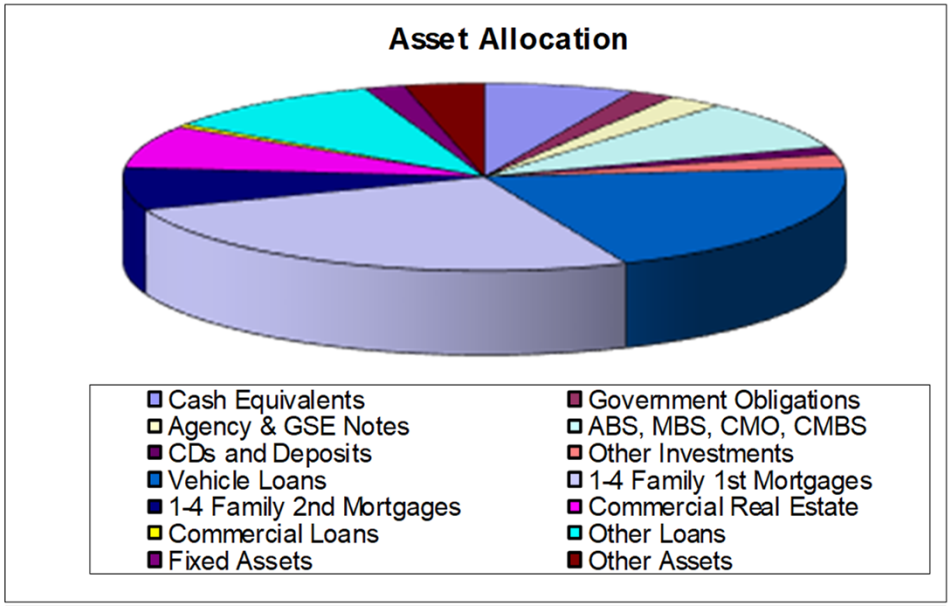
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Asset Liability Management
is the process of
Measuring, Monitoring and Managing
four areas of balance sheet risk:

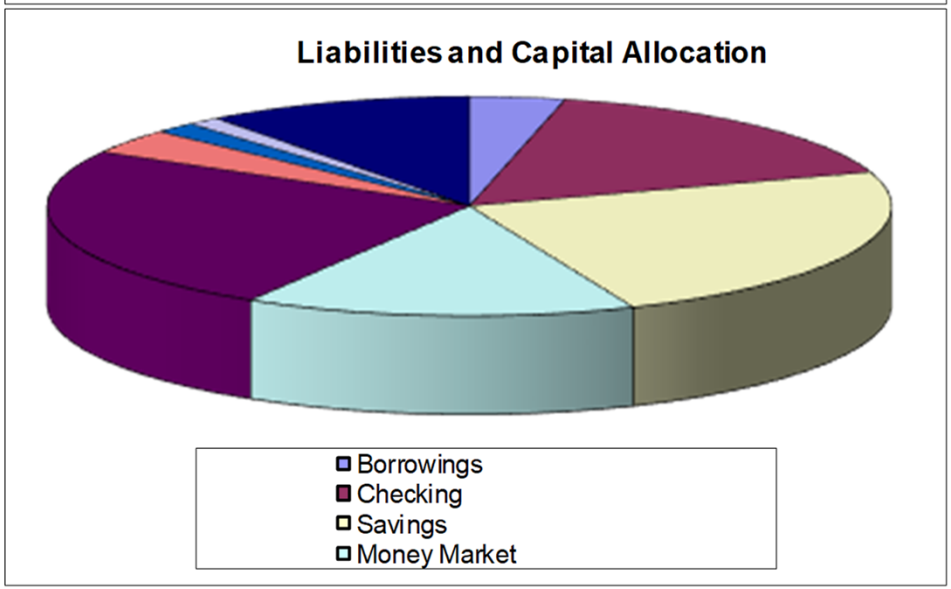
- Earnings
- Capital Utilization
- Liquidity
- Interest Rate Risk

Please Note: This presentation is intended as a basic introduction to concepts, methodologies and terminology related to Asset Liability Management for credit unions. ALM can be a very complex process involving potentially thousands of inputs, assumptions, variables and analyses. Each institution should use procedures and processes commensurate with the complexity of their balance sheet to appropriately measure monitor and manage its unique balance sheet risk.

Balance Sheet



Asset Allocation	$ Amount (,000)	As % Total
Cash Equivalents	$163,087	6.74%
Government Obligations	$48,204	1.99%
Agency & GSE Notes	$59,680	2.47%
ABS, MBS, CMO, CMBS	$208,577	8.62%
CDs and Deposits	$32,419	1.34%
Other Investments	$56,618	2.34%
Vehicle Loans	$486,657	20.11%
1-4 Family 1st Mortgages	$621,635	25.68%
1-4 Family 2nd Mortgages	$176,462	7.29%
Commercial Real Estate	$177,447	7.33%
Commercial Loans	$13,772	0.57%
Other Loans	$245,373	10.14%
Fixed Assets	$43,364	1.79%
Other Assets	$86,936	3.59%
Total Assets	$2,420,231	100.00%



Liabilities and Capital Allocation	$ Amount (,000)	As % of Total
Borrowings	$88,305	3.65%
Checking	$395,430	16.34%
Savings	$573,082	23.68%
Money Market	$362,493	14.98%
CDs	$594,240	24.55%
IRAs	$88,731	3.67%
Other Deposits	$39,205	1.62%
Other Liabilities	$30,588	1.26%
On Balance Sheet Capital	$248,157	10.25%
Total Liabilities and Capital	$2,420,231	100.00%

Source for Data: NCUA FOIA Call Report Data Files

The National Credit Union Administration

Deposits at credit unions in the United States are insured up to $250,000 per depositor by the National Credit Union Administration (NCUA). *

The NCUA maintains the National Credit Union Share Insurance Fund ("NCUSIF") to cover losses if a credit union goes bankrupt. Credit union's pay in to the NCUSIF maintaining a balance of $1.30 for every $100 dollars of insured deposits.

In addition, the US Congress has stated that NCUA deposit insurance is also backed by the full faith and credit of the United States government. If the NCUA were to ever exhaust the NCUSIF, the US Treasury will guarantee the deposits up to the insured limit.

** Note: as of September 2025 there are 4328 federally insured credit unions and 88 privately insured credit unions that do not have Federal deposit insurance.*

The NCUA also regulates the industry and audits each federally insured credit union every 12 to 18 months to ensure they are operating in a safe and sound manner.

The three primary measures of a credit union's financial health are:

- **Net worth to asset ratio,**
  = net worth / total assets
- **Risk-based capital ratio (for credit unions over $500 million in total assets)**
  = risk adjusted capital / risk weighted assets
- **Return on average assets ratio**
  = annualized net income / average total assets

1 "Retail" Funding

The institution brings in deposits from its customers:

- Checking Accounts
- Savings Accounts
- Money Market Accounts
- Retirement and Health Savings Accounts
- Commercial Accounts
- Time Deposits (CDs)

And pays interest on those deposits.

2 "Retail" Loans

A: The institution takes those deposits and lends it to other customers:

- Credit Cards
- Lines of Credit
- Consumer Loans
- Real Estate Loans
- Commercial Loans

The institution charges interest on those loans.

3 "Wholesale Loans"

B: If-and-when deposits grow faster than loans, the institution has "excess" liquidity and can:

- Invest into an "Overnight" Account
- Buy Loans or Loan Participations
- Invest in Time Deposits (CDs) in Other Institutions
- Invest in Securities
  - US Treasuries and Agency Notes
  - Asset-backed Securities
  - Corporate and Municipal Bonds

The institution earns interest on these "wholesale loans".

C: If loans grow faster than deposits (or if there are net deposit withdrawals) and the institution needs liquidity it can "cannibalize" overnight and maturing investments to fund loan growth or deposit withdrawals.

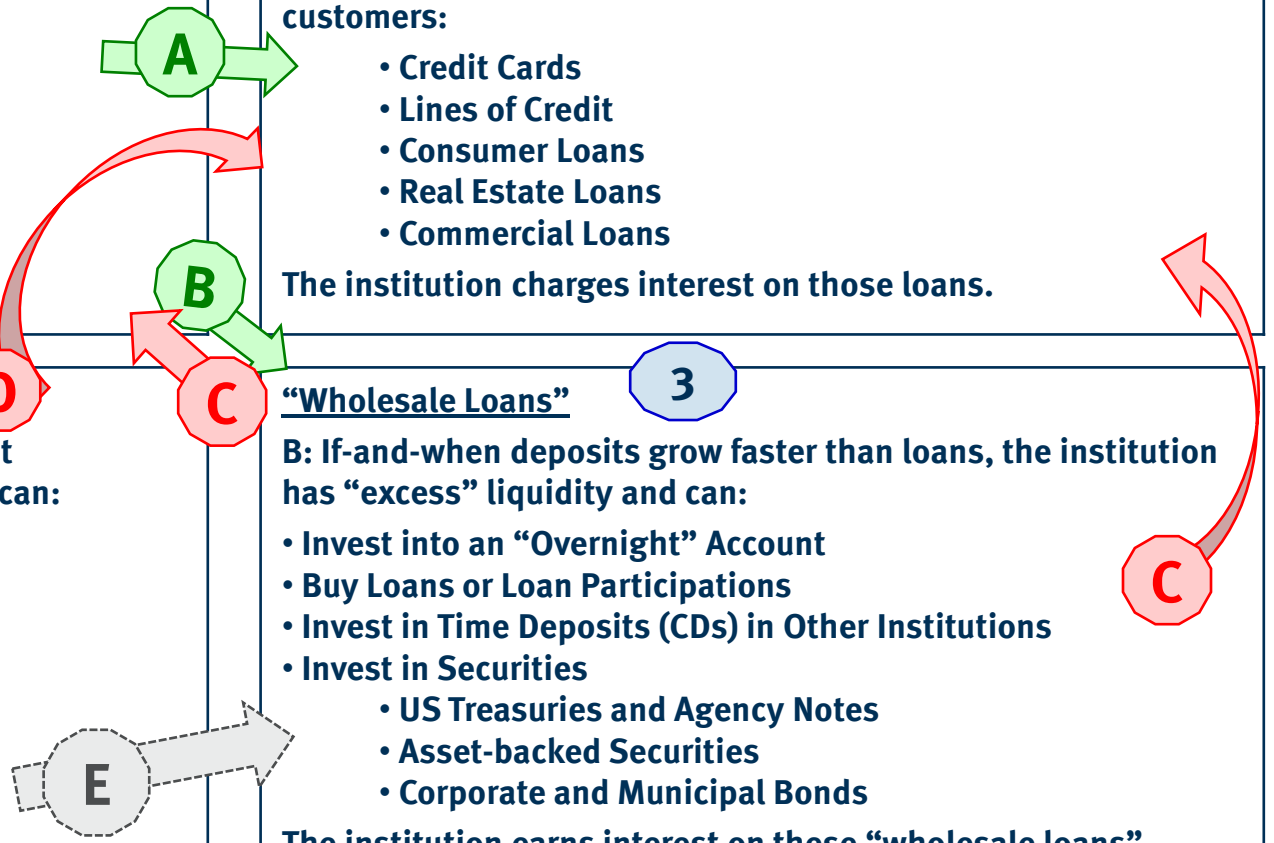
4 "Wholesale Funding"

D: If loans grow faster than deposits (or net deposit withdrawals) and the institution needs liquidity it can:

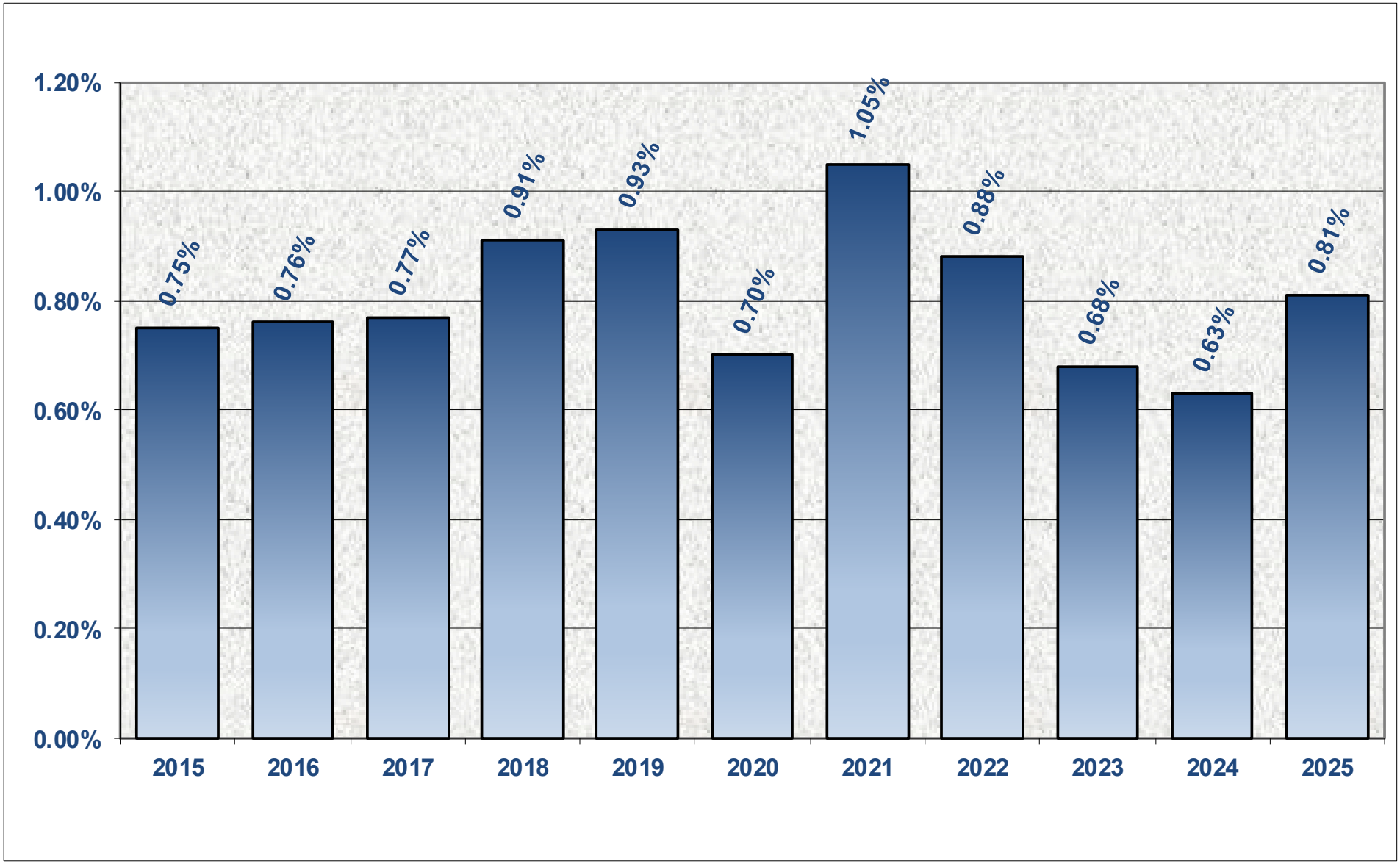
- Sell Loans or Loan Participations
- Early Withdraw Investment CDs
- Sell Investment Securities
- Borrow Money
  - Federal Home Loan Bank
  - Correspondent Bank
  - Federal Reserve
  - Repurchase Agreements

The institution pays interest on borrowings or "gives up" the income on assets sold (and may have a gain or loss on sale of those assets).

E: After appropriately assessing the risk, an institution may also use "wholesale funding" to buy "wholesale loans".



Credit Union Industry: Return on Average Assets



Source for Data: NCUA FOIA Call Report Data Files

There are nine components of an institution's earnings:

1) Loan Income
(originating the right loan to the right customer at the right rate)

2) Investment Income
(managing safety, liquidity, interest rate risk and yield)

3) Non-Interest Income
(fees, service charges, interchange income and other non-interest income)

4) Cost-of-funds
(interest expense on deposits and borrowings)

5) Non-Interest Expenses
(operating expenses, employee salaries and benefits, etc.)

6) Credit Losses
(loan losses, investment OTTI, FDIC and NCUA Assessments, etc.)

7) Gain (or Loss) on Asset Sales
(loan sales, investment sales, fixed asset sales, etc.)

8) Asset Allocation
(getting more loans out the door, not leaving excess liquidity in overnights)

9) Improve Capital Utilization
(maximizing asset growth without sacrificing safety and soundness)

Income Statement

	Quarterly	Sep-24	Dec-24	Mar-25	Jun-25	Sep-25
1	Quarterly Interest on Loans	$24,470,064	$24,895,565	$24,914,056	$25,631,313	**$26,488,667**
2	Quarterly Income from Investments	$5,200,734	$5,026,274	$4,955,718	$5,419,891	**$5,369,906**
3	Other Interest Income	$11,083	$20,373	$18,452	$27,877	**$12,103**
4	**Quarterly Total Interest Income**	**$29,681,881**	**$29,942,212**	**$29,888,226**	**$31,079,081**	**$31,870,676**
5	Quarterly Dividends on Shares	$8,373,876	$8,653,229	$8,286,825	$8,332,574	**$8,394,330**
6	Quarterly Interest on Deposits	$1,377,229	$1,374,724	$1,319,759	$1,307,287	**$1,317,189**
7	Q Dividends and Interest on Shares and Deposits	$9,751,105	$10,027,952	$9,606,583	$9,639,861	**$9,711,519**
8	Quarterly Interest on Borrowed Money	$1,628,896	$1,361,467	$1,181,928	$1,257,369	**$1,228,441**
9	**Quarterly Total Interest Expense**	**$11,380,001**	**$11,389,419**	**$10,788,511**	**$10,897,230**	**$10,939,960**
10	**Quarterly Net Interest Income**	**$18,301,879**	**$18,552,793**	**$19,099,715**	**$20,181,851**	**$20,930,717**
11	Gain (Loss) on Equity and Trading Securities	$280,235	-$12,330	-$27,990	$288,051	**$212,399**
12	**Quarterly Provision for Loan & Lease Losses**	**$3,419,479**	**$4,338,952**	**$3,302,018**	**$3,550,158**	**$3,651,219**
13	Quarterly Fee Income	$2,603,829	$2,675,174	$2,407,782	$2,469,454	**$2,628,523**
14	Quarterly Other Operating Income	$3,595,918	$3,509,261	$3,546,242	$3,757,769	**$3,778,343**
15	Quarterly Gain (Loss) on Sale of Investments	$196,838	-$261,261	$46,301	$39,912	**$28,885**
16	Quarterly Gain (Loss) on Sale of Loans	$168,810	$99,169	$93,121	$158,183	**$203,127**
17	Quarterly Gain (Loss) on Disposition of Fixed Assets	$42,835	$28,327	$31,314	$16,609	**$25,488**
18	Quarterly Other Non-operating Income (Expense)	-$117,920	$413,813	$114,818	$179,195	**$204,323**
19	**Quarterly Total Non-Interest Income (Expense)**	**$6,490,310**	**$6,464,484**	**$6,239,577**	**$6,621,122**	**$6,868,688**
20	Quarterly Employee Compensation and Benefits	$9,146,107	$9,328,792	$9,532,535	$9,711,852	**$9,843,515**
21	Quarterly Travel and Conference Expense	$134,825	$141,792	$131,618	$151,435	**$148,280**
22	Quarterly Office Occupancy Expense	$1,020,498	$1,025,104	$1,056,815	$1,044,729	**$1,070,646**
23	Quarterly Office Operations Expense	$3,195,069	$3,303,152	$3,294,669	$3,350,809	**$3,424,936**
24	Quarterly Educational and Promotional Expense	$668,289	$739,321	$642,969	$730,613	**$716,944**
25	Quarterly Loan Servicing Expense	$1,145,991	$1,169,119	$1,143,114	$1,208,071	**$1,236,964**
26	Quarterly Professional and Outside Services Expense	$1,569,422	$1,707,150	$1,621,890	$1,691,214	**$1,733,883**
27	Quarterly Member Insurance	$5,802	$5,448	$7,323	$6,553	**$6,881**
28	Quarterly Operating Fees (Exam and Supervisory fees)	$62,329	$61,837	$59,607	$62,830	**$63,169**
29	Quarterly Miscellaneous Operating Expenses	$618,459	$604,718	$563,645	$585,146	**$586,845**
30	**Quarterly Total Non-Interest Expense**	**$17,566,791**	**$18,086,432**	**$18,054,186**	**$18,543,252**	**$18,832,063**
31	**Quarterly Net Income (Loss)**	**$4,080,618**	**$2,552,116**	**$3,947,734**	**$4,990,121**	**$5,521,053**

Source for Data: NCUA FOIA Call Report Data Files

Quarterly Operating and Income Ratios

	CU Industry Q Operating and Income Ratios	Sep-24	Dec-24	Mar-25	Jun-25	Sep-25
1	Quarterly Average Loan Yield	5.96%	6.01%	5.98%	6.08%	6.19%
2	Quarterly Average Investment Yield	3.74%	3.67%	3.53%	3.76%	3.80%
3	Quarterly Average Yield on Earning Assets	5.40%	5.43%	5.36%	5.49%	5.60%
4	Quarterly Average Cost of Shares and Deposits	2.00%	2.04%	1.91%	1.89%	1.90%
5	Quarterly Average Cost of Borrowings	5.29%	4.97%	5.12%	5.64%	5.49%
6	Quarterly Average Cost of Funds	2.20%	2.19%	2.05%	2.05%	2.05%
7	Q Average Yield on Equity and Trading Investments	21.06%	-0.96%	-2.18%	21.68%	14.87%
8	Quarterly Loan Loss Provision to Average Assets	0.59%	0.74%	0.56%	0.59%	0.61%
9	Quarterly Non-Interest Income to Average Assets	1.07%	1.06%	1.01%	1.04%	1.06%
10	Quarterly Net Other Op Inc.(Exp.) to Average Assets	-0.02%	0.07%	0.02%	0.03%	0.03%
11	Quarterly Gain (Loss) on Sale of Assets to Avg Assets	0.07%	-0.02%	0.03%	0.04%	0.04%
12	Quarterly Non-Interest Expense to Average Assets	3.02%	3.10%	3.06%	3.10%	3.12%
13	**Quarterly Net Interest Margin**	**3.33%**	**3.36%**	**3.42%**	**3.56%**	**3.68%**
14	**Quarterly Return on Average Assets (ROA)**	**0.70%**	**0.44%**	**0.67%**	**0.83%**	**0.92%**
15	Quarterly Return on Average Equity (ROE)	7.37%	4.51%	6.89%	8.45%	9.06%
16	Period-Ending Loan to Asset Ratio	70.65%	71.38%	69.93%	70.78%	**71.12%**
17	Period-Ending Investment to Asset Ratio	24.10%	23.27%	24.76%	23.86%	**23.49%**
18	Period-Ending Loan to Share Ratio	84.38%	84.05%	81.92%	83.25%	**83.84%**
19	**Period-Ending Net Worth to Assets Ratio**	11.10%	11.18%	11.06%	11.20%	**11.34%**

Source for Data: NCUA FOIA Call Report Data Files www.ncua.gov

NCUA Rules and Regulations Part 702: Prompt Corrective Action

1. **Each credit union's capital adequacy based on its <u>net worth to asset ratio:</u>**

   › 7.00% = "Well Capitalized"
   6.00% - 6.99% = "Adequately Capitalized"
   5.00% - 5.99% = "Tier 1 Under Capitalized"
   4.00% - 4.99% = "Tier 2 Under Capitalized"
   ‹ 3.99% = "Significantly Under Capitalized"

2. **Credit Unions over $500 million in total assets are defined as a "Complex Credit Union" and must also meet a risk-based capital ("RBC") standard:**

   The risk-based capital ratio "weights" capital and assets based on credit risk (as defined by NCUA rules) and then calculates a risk-based capital to risk weighted assets ratio.

   a) If a Complex Credit Union has a net worth to asset ratio over 9.00%, the CU can choose to be exempt from having to calculate and report its RBC Ratio. This is referred to as opting-in to the "Complex Credit Union Ratio Framework" or "CCULR" (pronounced "cooler").

   b) If a Complex Credit Union's does not opt-in to CCULR or its net worth to asset ratio is less than 9%, it must maintain a minimum RBC ratio of 10.00% to be "well capitalized".

   c) If a Complex Credit Union
      - does not opt-in to the CCULR framework **or**
      - its net worth to asset ratio is over 7% but under 9%, **and**
      - its RBC ratio is less than 10.00%

      It is automatically re-classified as "adequately capitalized".

Any credit union that is not "adequately capitalized" or "well capitalized" is subject to the prompt corrective actions prescribed by NCUA Rules and Regulations Part 702.

Capital Utilization: Maximum Potential Asset Growth

		Q YTD	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	Quarterly Growth	$29,944	$147,654	$157,047	$167,037	$177,661	$188,959	$200,974	$213,753	$227,343
2	Cumulative Growth	$89,833	$147,654	$304,702	$471,738	$649,399	$838,358	$1,039,332	$1,253,085	$1,480,428
3	Total Assets Less PPPLF	$2,422,595	$2,570,249	$2,724,933	$2,891,969	$3,069,630	$3,258,589	$3,459,563	$3,673,316	$3,900,659
4	Quarterly Net Interest Income	$20,071	$20,624	$21,231	$21,877	$22,562	$23,289	$24,062	$24,882	$25,754
5	Q G(L) on Equities+Trading	$157	$0	$0	$0	$0	$0	$0	$0	$0
6	Q Ln Rebate+Special Dividend	$7	$0	$0	$0	$0	$0	$0	$0	$0
7	Q Credit Loss Provision	$3,501	$3,501	$3,501	$3,501	$3,501	$3,501	$3,501	$3,501	$3,501
8	Q Non-Interest Income	$6,196	$6,196	$6,196	$6,196	$6,196	$6,196	$6,196	$6,196	$6,196
9	Q Gain(Loss) Asset Sales	$214	$0	$0	$0	$0	$0	$0	$0	$0
10	Q Non-operating Inc (Exp)	$166	$166	$166	$166	$166	$166	$166	$166	$166
11	Non-Interest Expense	$18,477	$18,477	$18,477	$18,477	$18,477	$18,477	$18,477	$18,477	$18,477
12	Quarterly Net Income	$4,820	$5,008	$5,616	$6,261	$6,946	$7,674	$8,446	$9,267	$10,138
13	Annualized ROA	0.81%	0.81%	0.86%	0.90%	0.94%	0.98%	1.01%	1.05%	1.08%
14	Net Worth	$274,630	$279,638	$282,890	$289,152	$296,098	$303,771	$312,217	$321,484	$331,622
15	Net Worth Ratio	11.34%	10.88%	10.38%	10.00%	9.65%	9.32%	9.02%	8.75%	8.50%
16	Complex CU?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	CCULR Election?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
18	Estimated Risk-Based Capital	CCULR	CCULR	CCULR	CCULR	CCULR	CCULR	CCULR	$308,814	$312,554
19	Estimated Risk-Weighted Assets	CCULR	CCULR	CCULR	CCULR	CCULR	CCULR	CCULR	$2,362,728	$2,501,198
20	Estimated Risk-Based Capital Ratio	CCULR	CCULR	CCULR	CCULR	CCULR	CCULR	CCULR	13.07%	12.50%
21	Capital Classification	Well	Well	Well	Well	Well	Well	Well	Well	Well

This example credit union has an 11.34% net worth to asset ratio or $8.82 in assets for every $1 of net worth. At an 8.50% net worth to asset ratio, it could have as much as $11.76 in total assets for every $1 of net worth. This example credit union has room to grow by as much as $2.94 for every $1 of net worth, while potentially adding 27 basis points to ROA, $56 million in net worth and remaining well above the 7.00% net worth ratio to be classified as well capitalized.

1 "Retail" Funding

The institution brings in deposits from its customers:

- Checking Accounts
- Savings Accounts
- Money Market Accounts
- Retirement and Health Savings Accounts
- Commercial Accounts
- Time Deposits (CDs)

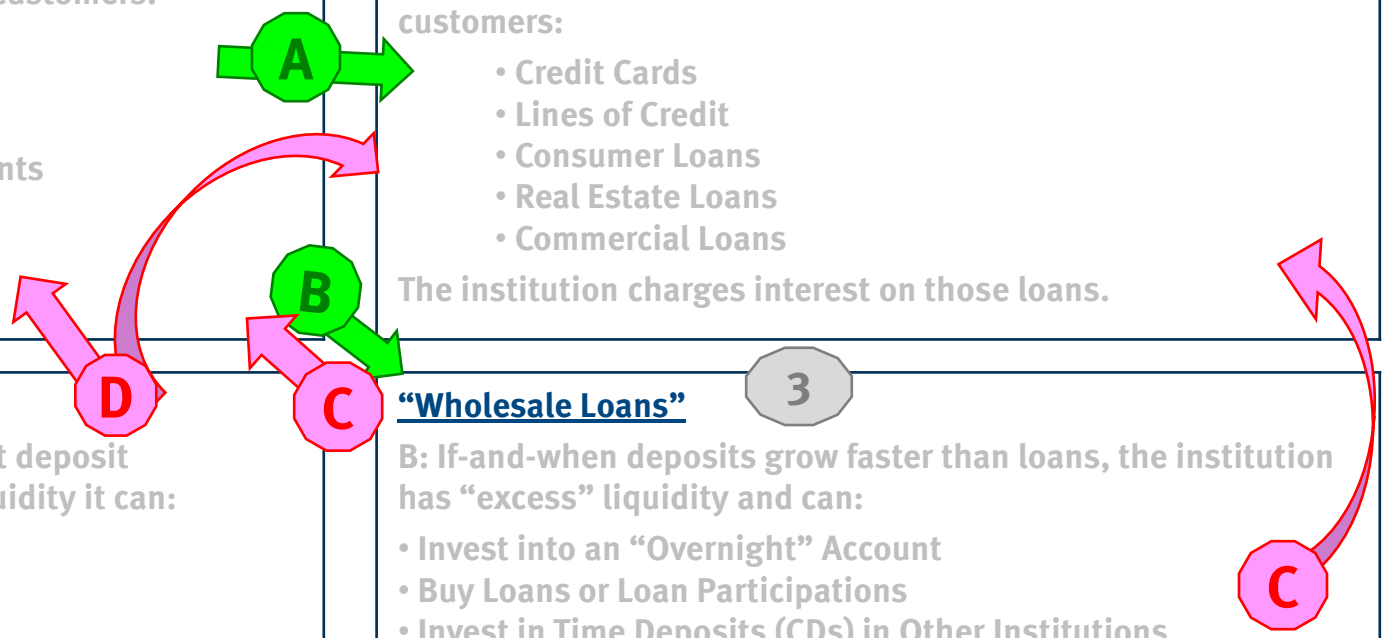
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- Consumer Loans
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- Commercial Loans

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3 "Wholesale Loans"

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4 "Wholesale Funding"

D: If loans grow faster than deposits (or net deposit withdrawals) and the institution needs liquidity it can:

- Sell Loans or Loan Participations
- Early Withdraw Investment CDs
- Sell Investment Securities
- Borrow Money
  - Federal Home Loan Bank
  - Correspondent Bank
  - Federal Reserve
  - Repurchase Agreements

The institution pays interest on borrowings or "gives up" the income on assets sold (and may have a gain or loss on sale of those assets).

E: After appropriately assessing the risk, an institution may also use "wholesale funding" to buy "wholesale loans".

Liquidity risk management includes have a contingency funding plan and a comprehensive assessment of the current and prospective cash flows and sources and uses of funds, commensurate with the complexity and business activities of the institution.

SOURCES OF FUNDS	USES OF FUNDS
New Shares and Deposits	Share and Deposit Withdrawals
Loan Principal Payments and Cashflow	New Loan Originations
Investment Maturities and Cashflows	Dividends on Shares and Deposits
Interest Income	Interest Expense on Borrowings
Non-interest Income	Operating Expenses
Corp CU Overnights or Fed Funds Sold	NCUSIF Deposit & Assessments
Sales of Securities, Loans, Other Assets	Pay-off of Existing Borrowings
Sale of Loan Participations	Fixed Asset Purchases or Expenditures
Early Withdrawal of Investment CDs	Investment Purchases
Non-member Deposits or Brokered CDs	Purchase of Loans or Loan Participations
Corp CU Lines of Credit	
FHLB Advances	
Repurchase Agreements (Repo of Securities)	
Other Lines of Credit (Correspondent Banks)	
Federal Reserve Advances	
Central Liquidity Facility	

Source: FFIEC Interagency Policy Statement on Funding and Liquidity Risk Management (March 2010)

http://www.ncua.gov/Resources/Documents/LCU2010-14Encl.pdf

Forecast Cashflow Liquidity

	Liquidity Analysis:	Current	90-days	12-months	24-months	
1	Forecast Loan (P+I) Cashflow		$153,291,818	$621,459,941	$644,169,434	(2)
2	Forecast Investment (P+I) Cashflow		$31,468,362	$127,738,841	$132,791,733	(3)
3	Forecast Net Share Growth		$26,295,237	$105,180,948	$110,879,784	(2)
4	Forecast Rollover of Maturing Borrowings		$11,141,766	$44,567,064	$12,693,696	(5)
5	Forecast Loan Sales		$14,951,676	$60,797,159	$63,506,722	(2)
6	Non-Interest Income		$6,625,389	$26,501,556	$26,501,556	(5)
7	**Forecast Cashflow In**		**$243,774,248**	**$986,245,509**	**$990,542,925**	
8	Forecast Loan Originations		$156,435,881	$636,106,404	$664,455,919	(2)
9	Forecast Loan and Loan Participation Purchases		$7,687,904	$31,260,889	$32,654,101	(4)
10	Assumed Investment Purchases		$0	$0	$0	(8)
11	Forecast Net Share Withdrawals		$0	$0	$0	(2)
12	Maturing Borrowings		$11,141,766	$44,567,064	$12,693,696	(5)
13	Forecast Dividend and Interest Expense		$10,872,124	$44,335,458	$46,650,805	(5)
14	Operating Expenses, NCUSIF, Other Cashflow Out		$19,266,760	$76,102,317	$76,283,490	(5)
15	**Forecast Cashflow Out**		**$205,404,435**	**$832,372,132**	**$832,738,011**	
16	**Net Core Cashflow**		**$38,369,813**	**$153,873,377**	**$157,804,914**	
17	New Borrowings, Non-member Deposits & LPs Sold		$0	$0	$0	
18	**Ending Balance Cash + Cash Equivalents**	**$185,476,386**	**$223,846,199**	**$339,349,763**	**$497,154,677**	**(1)**
19	Total Lines of Credit and Other Borrowing Capacity	$464,205,869	$464,205,869	$464,205,869	$464,205,869	(6)
20	Less Outstanding Borrowings	$84,089,180	$84,089,180	$84,089,180	$84,089,180	(5)
21	**Net Available LOC and Other Borrowing Capacity**	**$380,116,689**	**$380,116,689**	**$380,116,689**	**$380,116,689**	
22	Securities (Net Cashflows) at 94% Current Mkt Value	$331,001,771	$308,069,103	$239,271,098	$147,540,424	(3)
23	Less Securities Pledged as Collateral	$84,089,180	$84,089,180	$84,089,180	$84,089,180	
24	Net Securities Available for Liquidation	$246,912,591	$223,979,923	$155,181,918	$63,451,244	(3)
25	Investment CDs Net of 6 Mo. Early Withdrawal Penalty	$32,014,067	$32,014,067	$32,014,067	$32,014,067	(5)
26	Net Available Non-Member Deposits	$425,001,201	$429,244,708	$448,464,817	$475,456,689	(7)
27	**Additional Sources of Funds**	**$703,927,859**	**$685,238,697**	**$635,660,801**	**$570,921,999**	
28	**Total Contingent Liquidity**	**$1,084,044,547**	**$1,065,355,386**	**$1,015,777,490**	**$951,038,688**	
29	**Total Liquidity**	**$1,269,520,933**	**$1,289,201,585**	**$1,355,127,253**	**$1,448,193,365**	

Forecast Cashflow
Liquidity Ratios

	Liquidity Ratios	Sep-25	90-days	12-months	24-months
30	Forecast Cashflow In as % Total Assets		9.94%	38.70%	36.91%
31	Forecast Cashflows Out as % Total Assets		8.38%	32.66%	31.03%
32	Net Cashflow Liquidity % Total Assets		1.56%	6.04%	5.88%
33	Cash & Cash Equivalents as % of Total Assets	7.66%	9.13%	13.32%	18.52%
34	Available Lines of Credit as % Total Assets	15.71%	15.50%	14.92%	14.16%
35	Additional Sources of Funds as % Total Assets	29.09%	27.95%	24.94%	21.27%
36	tal Contingent Liquidity as % of Total Assets	44.79%	43.45%	39.86%	35.44%
37	Total Liquidity as % of Total Assets	52.45%	52.58%	53.18%	53.96%

1 "Retail" Funding

The institution brings in deposits from its customers:

- Checking Accounts
- Savings Accounts
- Money Market Accounts
- Retirement and Health Savings Accounts
- Commercial Accounts
- Time Deposits (CDs)

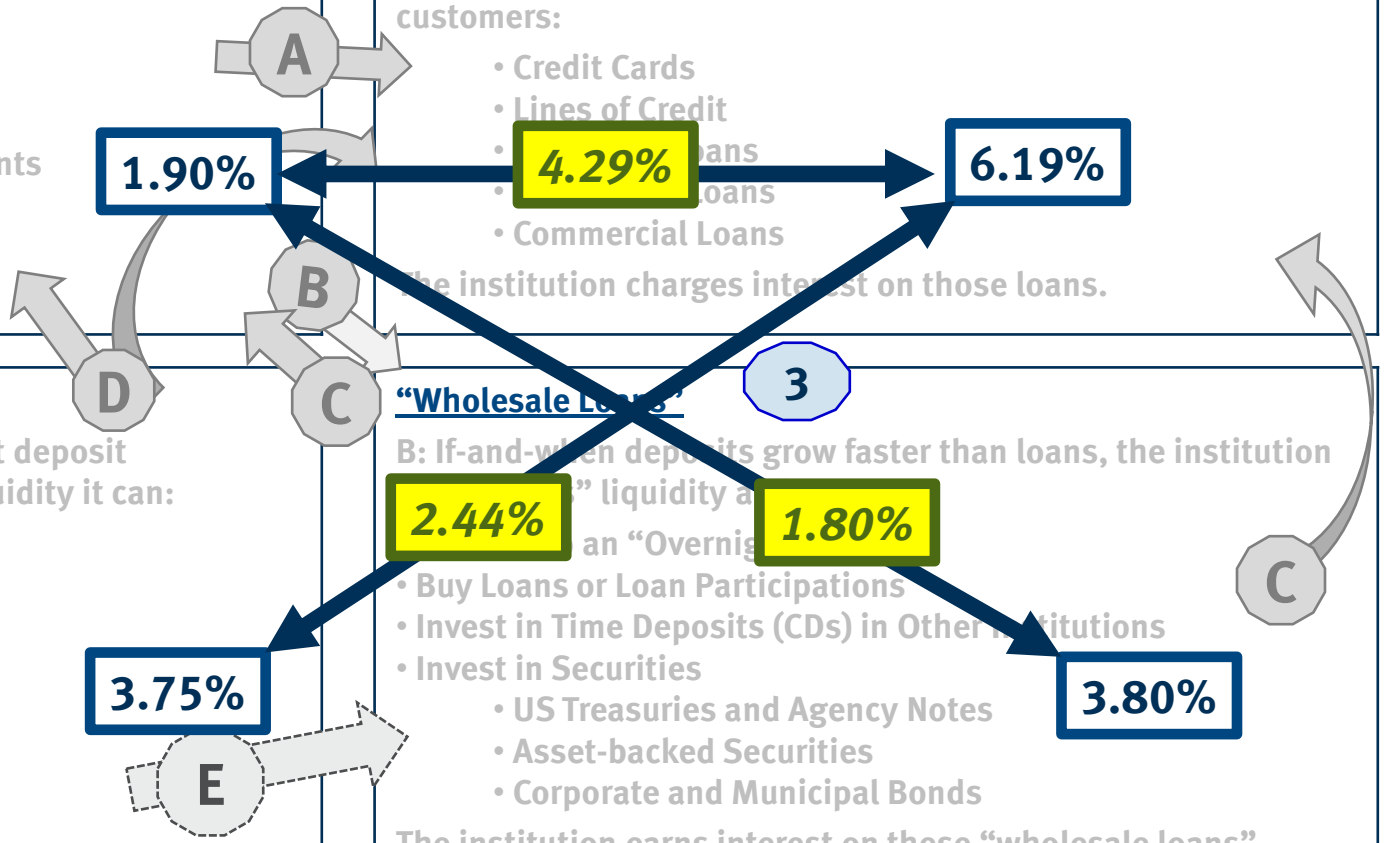
And pays interest on those deposits.

2 "Retail" Loans

A: The institution takes those deposits and lends it to other customers:

- Credit Cards
- Lines of Credit
- [illegible]ans
- [illegible]oans
- Commercial Loans

The institution charges interest on those loans.



3 "Wholesale Loans"

B: If-and-when deposits grow faster than loans, the institution "[illegible]" liquidity a[illegible]

an "Overnig[illegible]

- Buy Loans or Loan Participations
- Invest in Time Deposits (CDs) in Other I[illegible]titutions
- Invest in Securities
  - US Treasuries and Agency Notes
  - Asset-backed Securities
  - Corporate and Municipal Bonds

The institution earns interest on these "wholesale loans".

C: If loans grow faster than deposits (or if there are net deposit withdrawals) and the institution needs liquidity it can "cannibalize" overnight and maturing investments to fund loan growth or deposit withdrawals.

4 "Wholesale Funding"

D: If loans grow faster than deposits (or net deposit withdrawals) and the institution needs liquidity it can:

- Sell Loans or Loan Participations
- Early Withdraw Investment CDs
- Sell Investment Securities
- Borrow Money
  - Federal Home Loan Bank
  - Correspondent Bank
  - Federal Reserve
  - Repurchase Agreements

The institution pays interest on borrowings or "gives up" the income on assets sold (and may have a gain or loss on sale of those assets).

E: After appropriately assessing the risk, an institution may also use "wholesale funding" to buy "wholesale loans".

Interest Rate Risk (IRR) is the risk to a credit union's earnings and capital from changes in interest rates.

The two common methods of measuring interest rate risk are:

- **Income Simulation (Earnings at Risk)**
- **Net Economic Value (Market Value Risk)**

The process of measuring and monitoring IRR involves:

- **Modeling the current balance sheet**
- **Making assumptions about potential future member and management behavior**
- **Running a series of "what-if" forecasts under multiple rate-shock and interest rate scenarios using multiple sets of assumptions and then measuring, monitoring and managing the various possible outcomes**

Income Simulation (Earnings at Risk)

Income simulation forecasts the future interest income on assets (loans and investments) and interest expense (on shares, deposits and borrowings) under multiple interest rate scenarios. The forecast change in net interest income is then applied to the forecast income statement to estimate the potential **earnings at risk** and potential impact on return on assets, net worth and the net worth ratio.

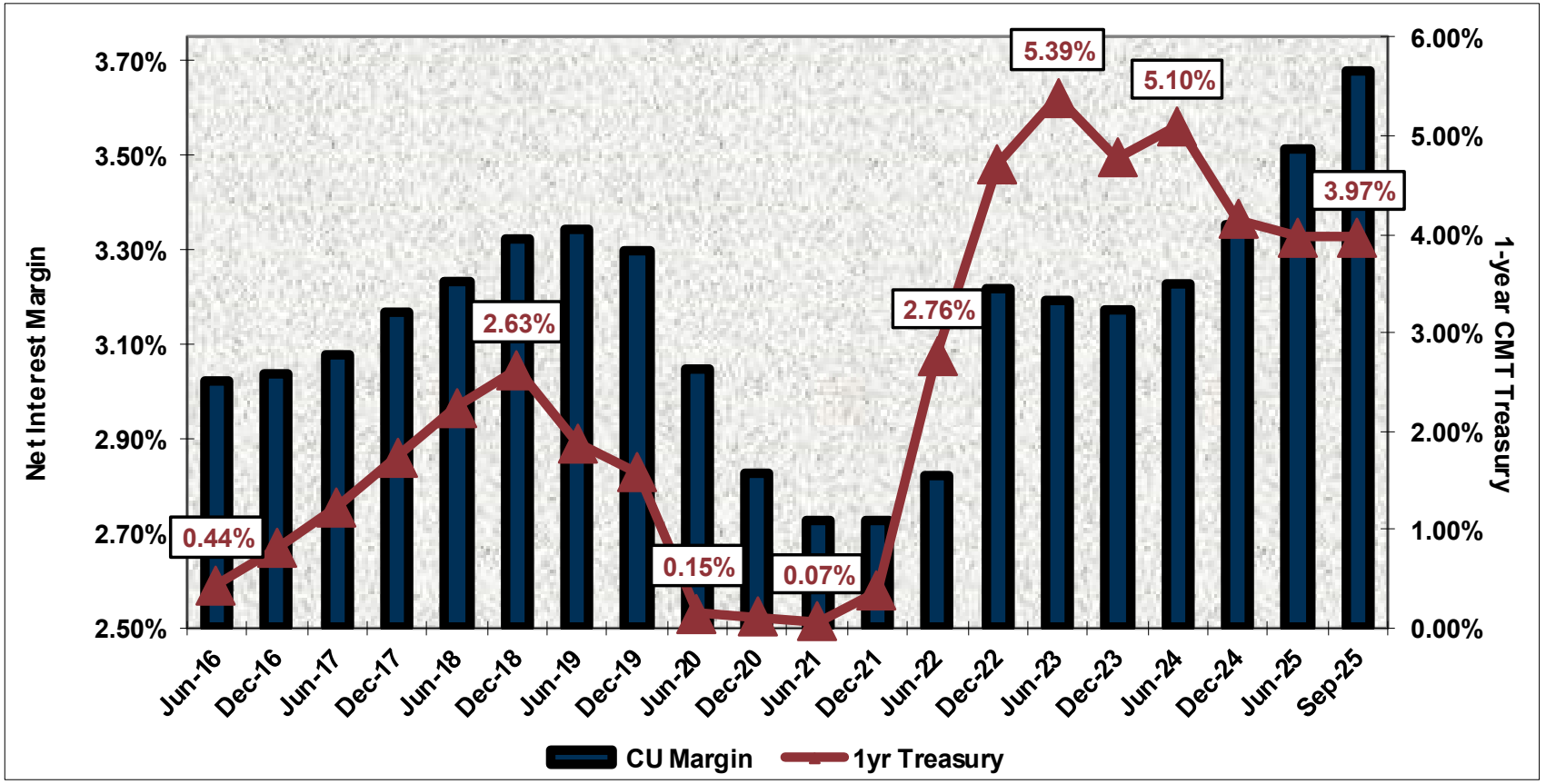
Net Economic Value (Value at Risk)

Net economic value (NEV) measures the theoretical liquidation value of the credit union under multiple interest rate scenarios. NEV is the estimated fair value of all assets minus the estimated fair value of all liabilities resulting in the estimated fair value of capital. By re-calculating the NEV under multiple interest rate environments, theoretically one can estimate the **value at risk** of liquidating the credit union.

Net Interest Margin

Net Interest margin is a ratio that represents the "spread" between the yield on earning assets (interest income on loans and investments) and the cost of funding those assets (dividend and interest expense on shares, deposits and borrowings). As the general level of interest rates change, what is the impact on Net Interest Income ($) and Net Interest Margin (%)?

	Jun-16	Dec-16	Jun-17	Dec-17	Jun-18	Dec-18	Jun-19	Dec-19	Jun-20	Dec-20	Jun-21	Dec-21	Jun-22	Dec-22	Jun-23	Dec-23	Jun-24	Dec-24	Jun-25	Sep-25
Loan Yield	4.56%	4.56%	4.48%	4.59%	4.59%	4.79%	4.86%	4.97%	4.78%	4.60%	4.42%	4.39%	4.23%	4.61%	4.98%	5.48%	5.70%	5.99%	6.01%	6.19%
Inv Yield	1.33%	1.33%	1.54%	1.69%	1.92%	2.11%	2.39%	2.20%	1.53%	1.02%	0.87%	0.88%	1.13%	2.18%	2.93%	3.19%	3.75%	3.75%	3.76%	3.80%
Cost of Funds	0.58%	0.61%	0.60%	0.67%	0.70%	0.85%	0.97%	1.06%	0.89%	0.69%	0.51%	0.45%	0.41%	0.73%	1.32%	1.82%	2.10%	2.20%	2.06%	2.05%
CU Margin	3.02%	3.04%	3.08%	3.17%	3.23%	3.32%	3.35%	3.30%	3.05%	2.83%	2.73%	2.73%	2.82%	3.22%	3.19%	3.17%	3.23%	3.36%	3.51%	3.68%
1yr Treasury	0.44%	0.81%	1.23%	1.74%	2.24%	2.63%	1.89%	1.58%	0.15%	0.11%	0.07%	0.38%	2.76%	4.71%	5.39%	4.77%	5.10%	4.15%	3.97%	3.97%



Source for Data: NCUA FOIA Call Report Data Files www.ncua.gov

Net Interest Income Simulation – Summary Results

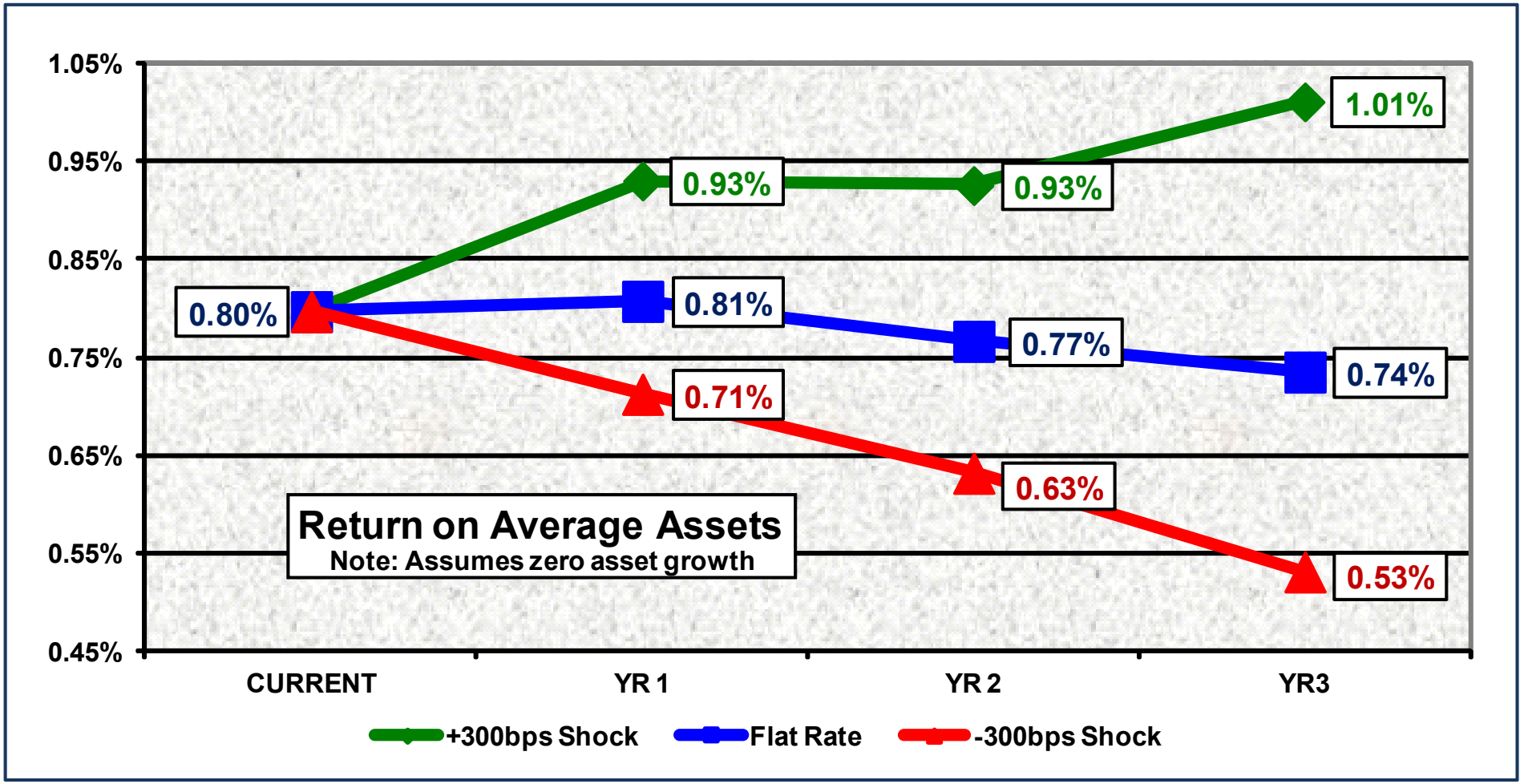
Net Interest Income	Year 1	Year 2	Year 3
% Change from Flat	4.40%	5.85%	10.36%
+300bps Shock	$33,534	$33,580	$34,684
Flat Rate Scenario	*$32,121*	*$31,724*	*$31,427*
-300bps Shock	$31,024	$30,158	$29,036
% Change from Flat	-3.42%	-4.94%	-7.61%

+300bps Shock	YEAR 1	YEAR 2	YEAR 3
Net Interest Income	$33,534	$33,580	$34,684
Net Interest Margin	3.16%	3.17%	3.27%
Net Income	$10,627	$10,673	$11,777
Projected ROA	0.93%	0.93%	1.01%
Projected Net Worth	$135,230	$145,903	$157,680
Projected Net Worth Ratio	11.84%	12.66%	13.54%

Flat Rate Scenario	*YEAR 1*	*YEAR 2*	*YEAR 3*
Net Interest Income	$32,121	$31,724	$31,427
Net Interest Margin	2.96%	2.90%	2.85%
Net Income	$9,214	$8,817	$8,520
Projected ROA	0.81%	0.77%	0.74%
Projected Net Worth	$133,818	$142,634	$151,154
Projected Net Worth Ratio	11.68%	12.36%	13.00%

-300bps Shock	YEAR 1	YEAR 2	YEAR 3
Net Interest Income	$31,024	$30,158	$29,036
Net Interest Margin	2.93%	2.85%	2.75%
Net Income	$8,117	$7,250	$6,128
Projected ROA	0.71%	0.63%	0.53%
Projected Net Worth	$132,720	$139,971	$146,099
Projected Net Worth Ratio	11.65%	12.20%	12.67%

Net Interest Income Simulation – Summary Results

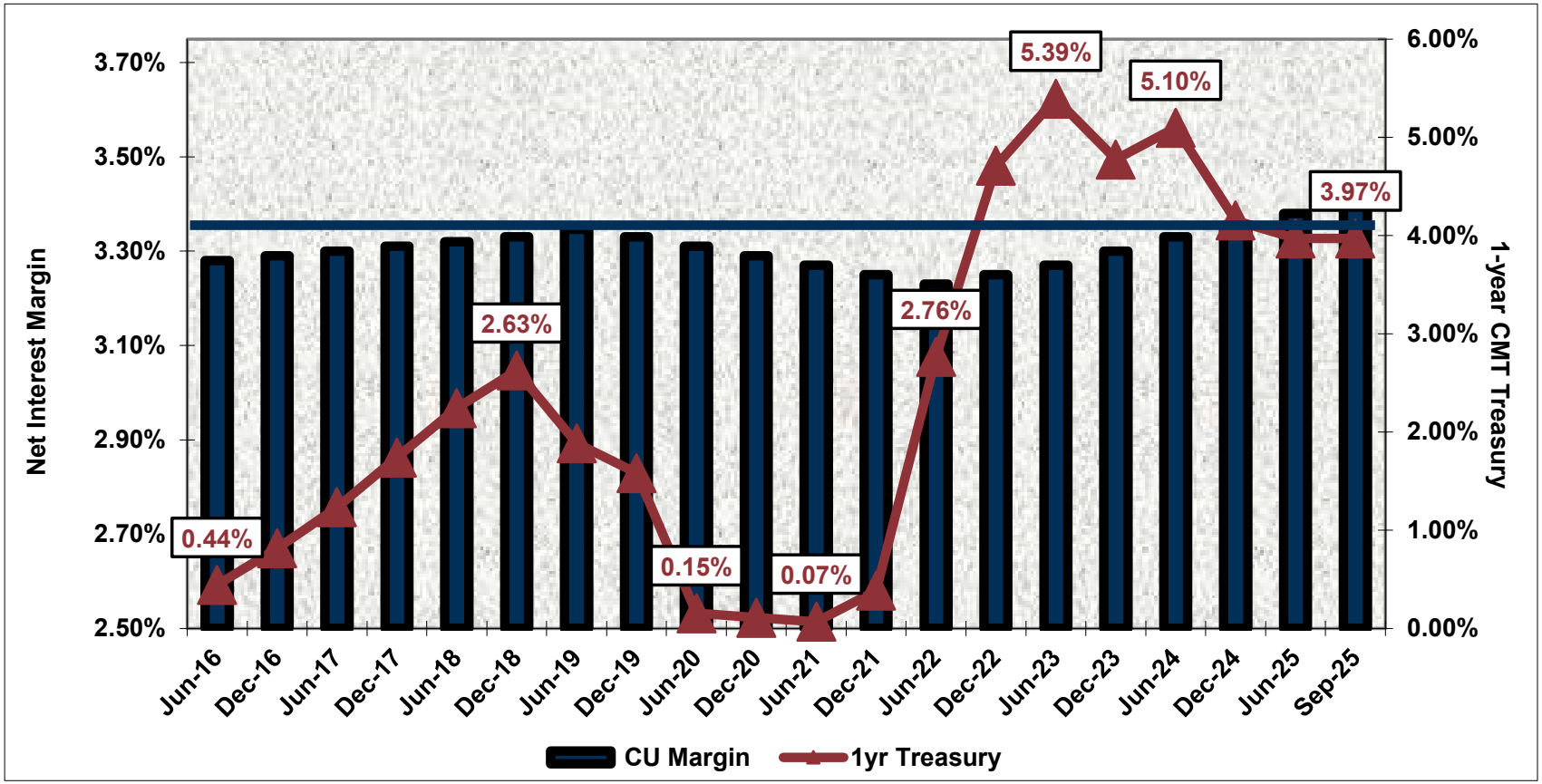


In this example, the institution makes more margin and income in the rising rate environment, and margins and earnings are hurt by a low rate environment. This profile is generally referred to as "asset sensitive."

Net Interest Margin

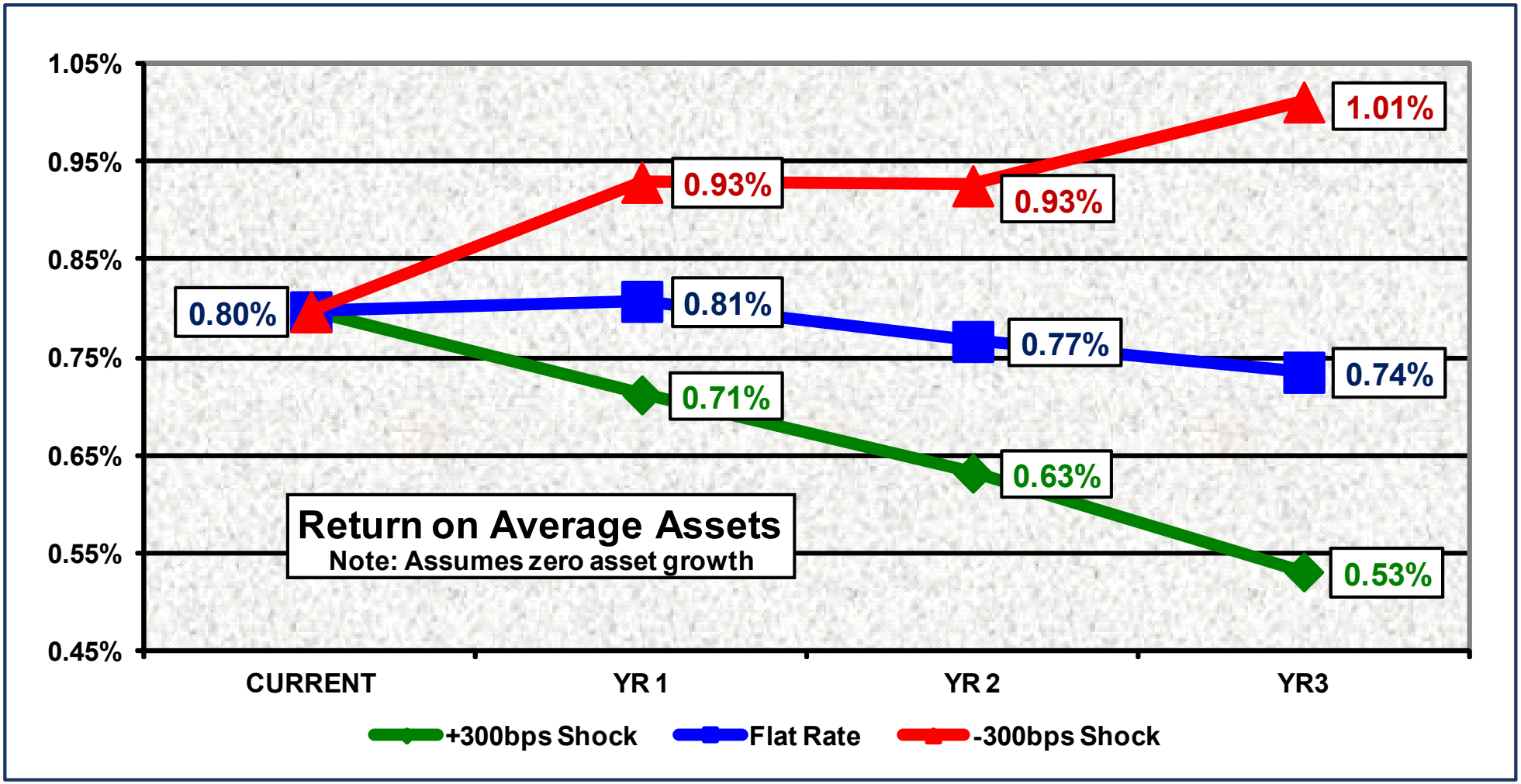
Net Interest margin is a ratio that represents the "spread" between the yield on earning assets (interest income on loans and investments) and the cost of funding those assets (dividend and interest expense on shares, deposits and borrowings). As the general level of interest rates change, what is the impact on Net Interest Income ($) and Net Interest Margin (%)?

	Jun-16	Dec-16	Jun-17	Dec-17	Jun-18	Dec-18	Jun-19	Dec-19	Jun-20	Dec-20	Jun-21	Dec-21	Jun-22	Dec-22	Jun-23	Dec-23	Jun-24	Dec-24	Jun-25	Sep-25
Loan Yield	4.56%	4.56%	4.48%	4.59%	4.59%	4.79%	4.86%	4.97%	4.78%	4.60%	4.42%	4.39%	4.23%	4.61%	4.98%	5.48%	5.70%	5.99%	6.01%	6.19%
Inv Yield	1.33%	1.33%	1.54%	1.69%	1.92%	2.11%	2.39%	2.20%	1.53%	1.02%	0.87%	0.88%	1.13%	2.18%	2.93%	3.19%	3.75%	3.75%	3.76%	3.80%
Cost of Funds	0.58%	0.61%	0.60%	0.67%	0.70%	0.85%	0.97%	1.06%	0.89%	0.69%	0.51%	0.45%	0.41%	0.73%	1.32%	1.82%	2.10%	2.20%	2.06%	2.05%
CU Margin	3.28%	3.29%	3.30%	3.31%	3.32%	3.33%	3.35%	3.33%	3.31%	3.29%	3.27%	3.25%	3.23%	3.25%	3.27%	3.30%	3.33%	3.36%	3.38%	3.40%
1yr Treasury	0.44%	0.81%	1.23%	1.74%	2.24%	2.63%	1.89%	1.58%	0.15%	0.11%	0.07%	0.38%	2.76%	4.71%	5.39%	4.77%	5.10%	4.15%	3.97%	3.97%



Source for Data: NCUA FOIA Call Report Data Files www.ncua.gov

Net Interest Income Simulation – Summary Results (Liability Sensitive Example)



In this example, the institution's margin and income increase in the falling rate environment, and margins and earnings are hurt by a higher rate environment. This profile is generally referred to as "liability sensitive".

Net Economic Value (NEV) measures the theoretical liquidation value of the credit union under multiple interest rate scenarios. NEV is the estimated fair value of all assets minus the estimated fair value of all liabilities resulting in the estimated fair value of capital.

Sample Credit Union	Book	Value	Value	Change	% Change
December 31	Value	Flat Rate	+300bps	From Flat	From Flat
Total Investments	$59,414,736	$59,909,650	$53,120,084	-$6,789,567	-11.33%
Total Loans	$131,111,207	$131,881,232	$118,820,673	-$13,060,559	-9.90%
Other Assets	$9,474,056	$9,474,056	$9,474,056	$0	0.00%
Total Assets	**$200,000,000**	**$201,264,938**	**$181,414,813**	**-$19,850,125**	**-9.86%**
Non-maturity Deposits	$126,030,472	$121,887,047	$113,527,246	-$8,359,801	**-6.86%**
Time Deposits	$43,279,518	$43,782,068	$42,089,573	-$1,692,495	-3.87%
Borrowings	$7,796,738	$7,987,866	$7,844,489	-$143,377	-1.79%
Other Liabilities	$1,568,977	$1,568,977	$1,568,977	$0	0.00%
Total Deposits+Liabilities	**$178,675,705**	**$175,225,958**	**$165,030,285**	**-$10,195,674**	**-5.82%**
Net Economic Value	**$21,324,295**	**$26,038,980**	**$16,384,529**	**-$9,654,451**	**-37.08%**
NEV Capital Ratio	**10.66%**	**12.94%**	**9.03%**		

NCUA AIRES Questionnaire (Aug 2012 update)	RISK ASSESSMENT		
Net Economic Value	LOW	MODERATE	HIGH
% Change +300bps Rate-shock "Market Value of Capital"	<25%	25--50%	> 50%
After +300bps Rate-shock "NEV Capital Ratio"	>6%	4--6%	< 4%

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