Shifting Perspective Dynamic ALM Modeling

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"Shifting Perspective Dynamic ALM Modeling" discussed in this presentation is the current version with effective date of May 26, 2021.

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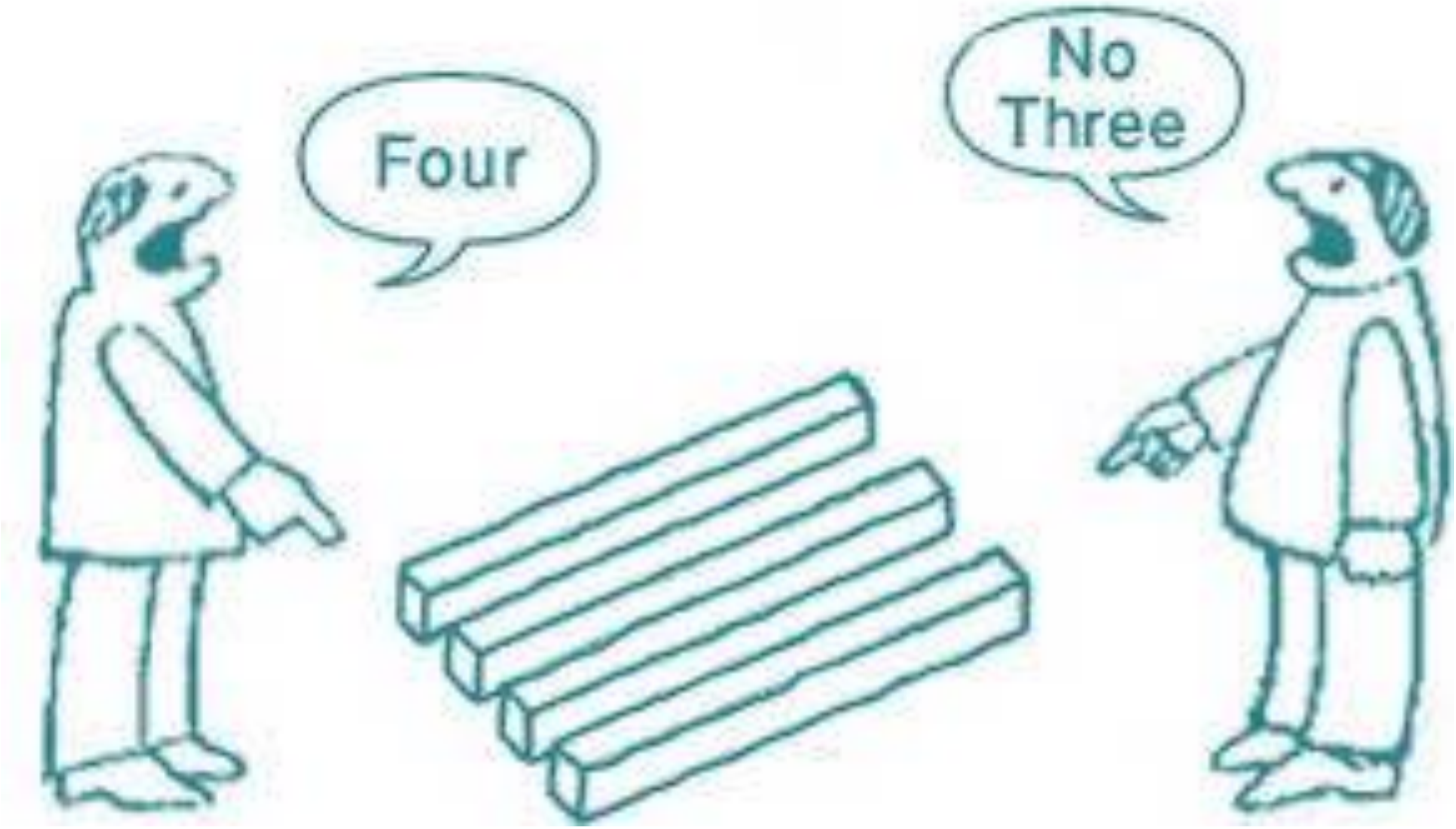
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Objectives

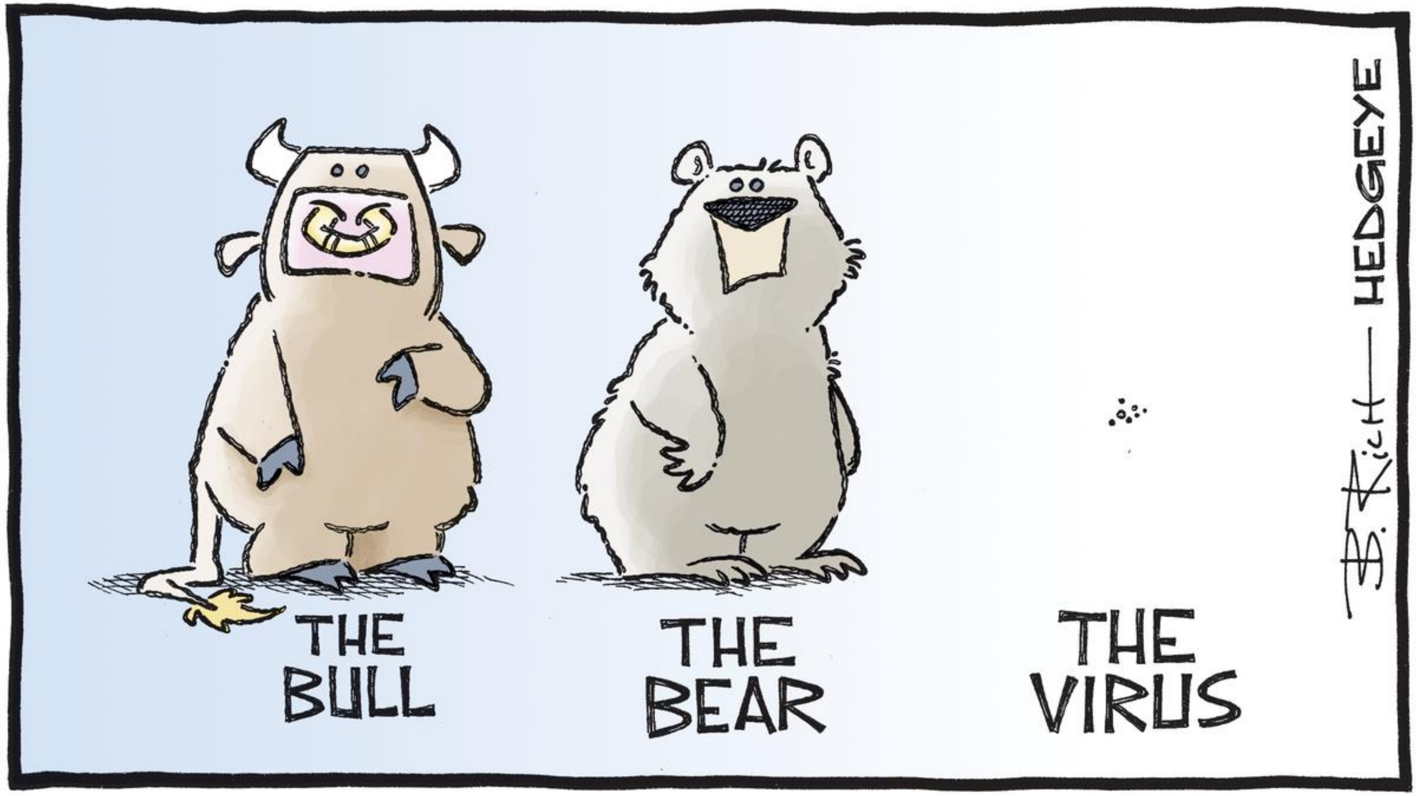
Market Rates & Trends – What Do They Tell Us?

Key Issues Impacting Earnings and Capital

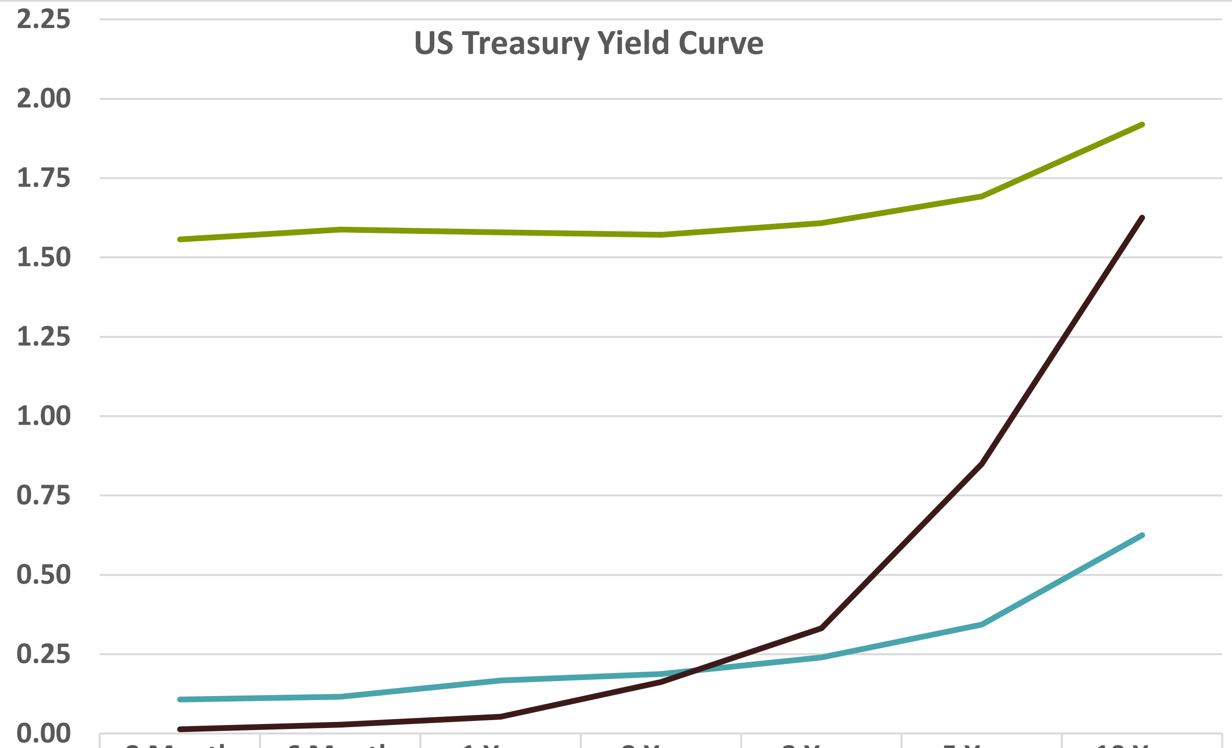
Why Dynamic ALM Modeling?

Scenario Analysis

Market Rates



US Treasury Curve



	3 Month	6 Month	1 Year	2 Year	3 Year	5 Year	10 Year
12/31/2019	1.56	1.59	1.58	1.57	1.61	1.69	1.92
4/30/2020	0.11	0.12	0.17	0.19	0.24	0.34	0.63
4/30/2021	0.01	0.03	0.05	0.16	0.33	0.85	1.63

Monetary Policy – April 2021 FOMC Meeting

- **Maintained Fed Funds target rate at 0% to 0.25% and commitment to purchase bonds.**
- **Firm stance that rates will not increase until they reach inflation and labor market goals.**
- **Expects some future period of inflation above 2% before moderating.**
- **“***While the recovery has progressed more quickly than generally expected, it remains uneven and far from complete,” “The path of the economy continues to depend significantly on the course of the virus and the measures undertaken to control its spread.” Jerome Powell*

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Market Rate Expectations

	Rate	Market Yld	Q2 21	Q3 21	Q4 21	Q1 22	Q2 22	Q3 22	Q4 22	Q1 23	Q2 23	Q3 23
	United States											
1)	US 30-Year	2.26	2.39	2.47	2.50	2.58	2.64	2.69	2.74	2.90	2.96	2.99
2)	US 10-Year	1.59	1.71	1.78	1.83	1.92	1.98	2.04	2.12	2.23	2.30	2.37
3)	US 5-Year	0.82	0.90	0.97	1.00	1.08	1.15	1.24	1.32	1.40	1.48	1.54
4)	US 2-Year	0.16	0.19	0.25	0.31	0.38	0.46	0.55	0.63	0.70	0.79	0.86
5)	US 3-Month Libor	0.18	0.22	0.24	0.27	0.30	0.34	0.37	0.39	0.50	0.57	0.61
6)	Fed Funds Rate - Upper Bound	0.25	0.25	0.25	0.25	0.30	0.30	0.30	0.35	0.35	0.45	0.50
7)	Fed Funds Rate - Lower Bound	0.00	0.00	0.01	0.01	0.03	0.04	0.06	0.08	0.12	0.20	0.23
	2 Year - 10 Year Spread	1.42	1.52	1.53	1.52	1.54	1.52	1.50	1.49	1.53	1.51	1.51

Source: Bloomberg 5/4/21

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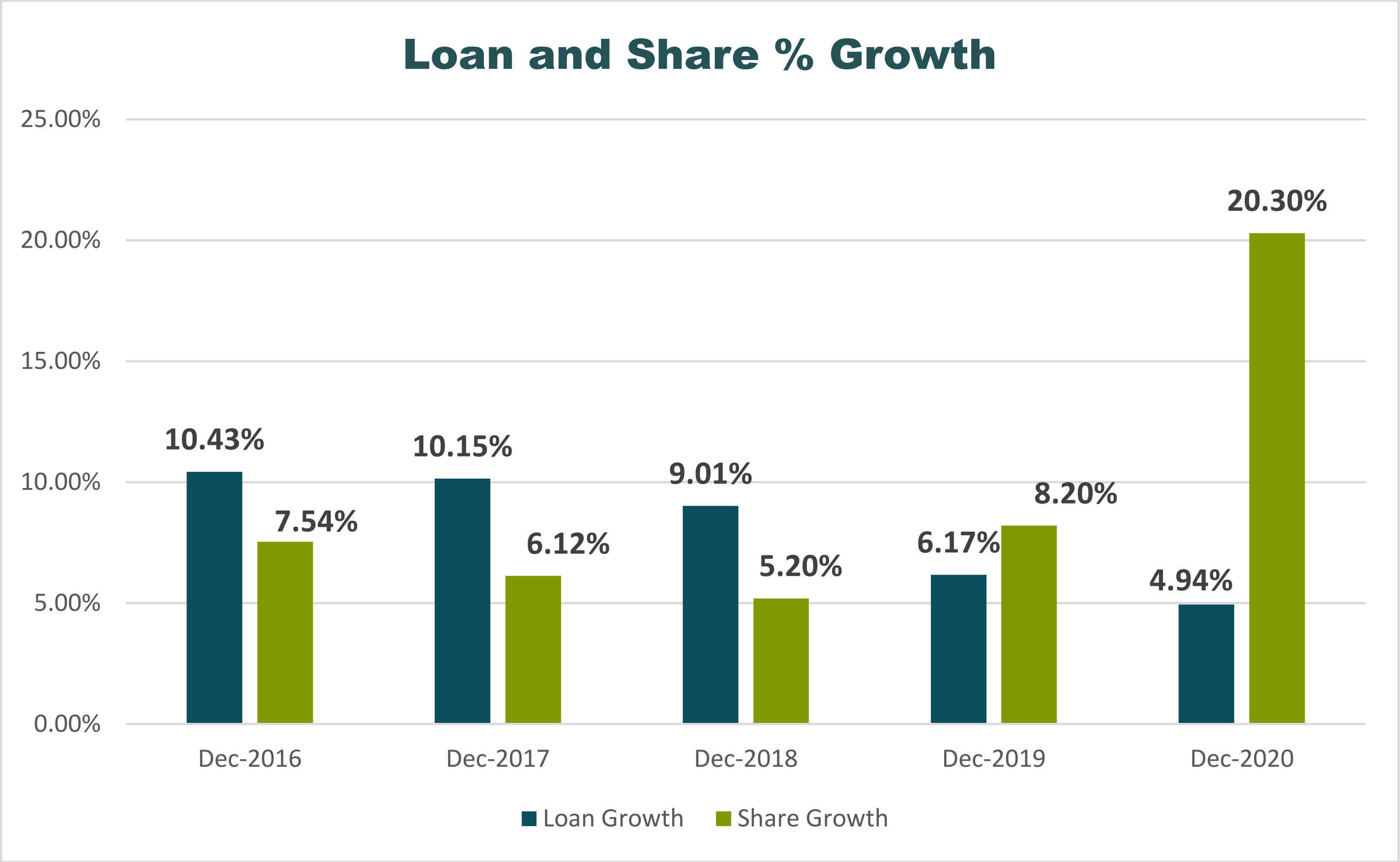
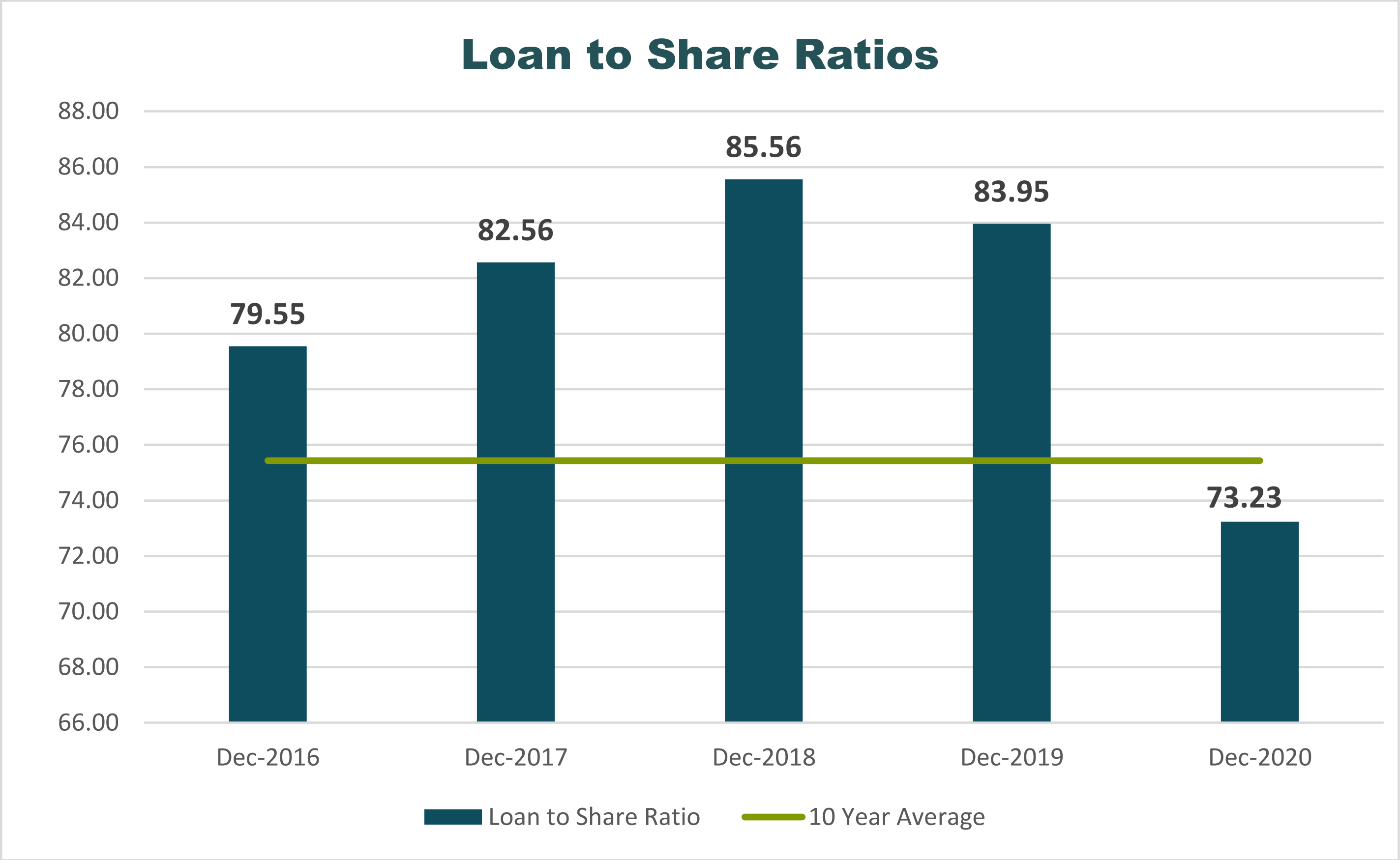
CU Trends
What Do They Tell Us?

Stimulus Drives Share Growth

Lowest Loan Growth since 2012



Share Surge Pushed Ratio Below 10 Year Average



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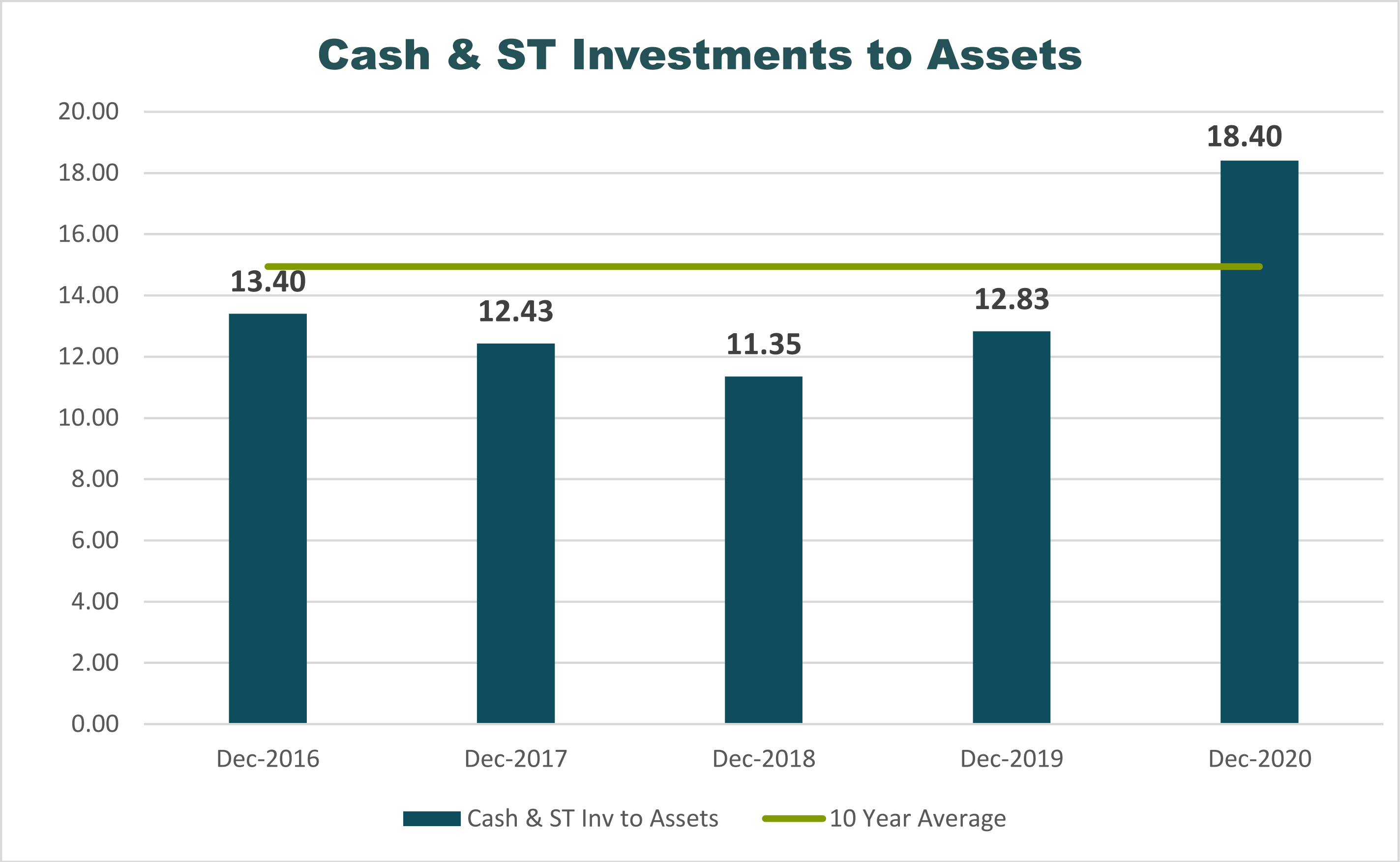
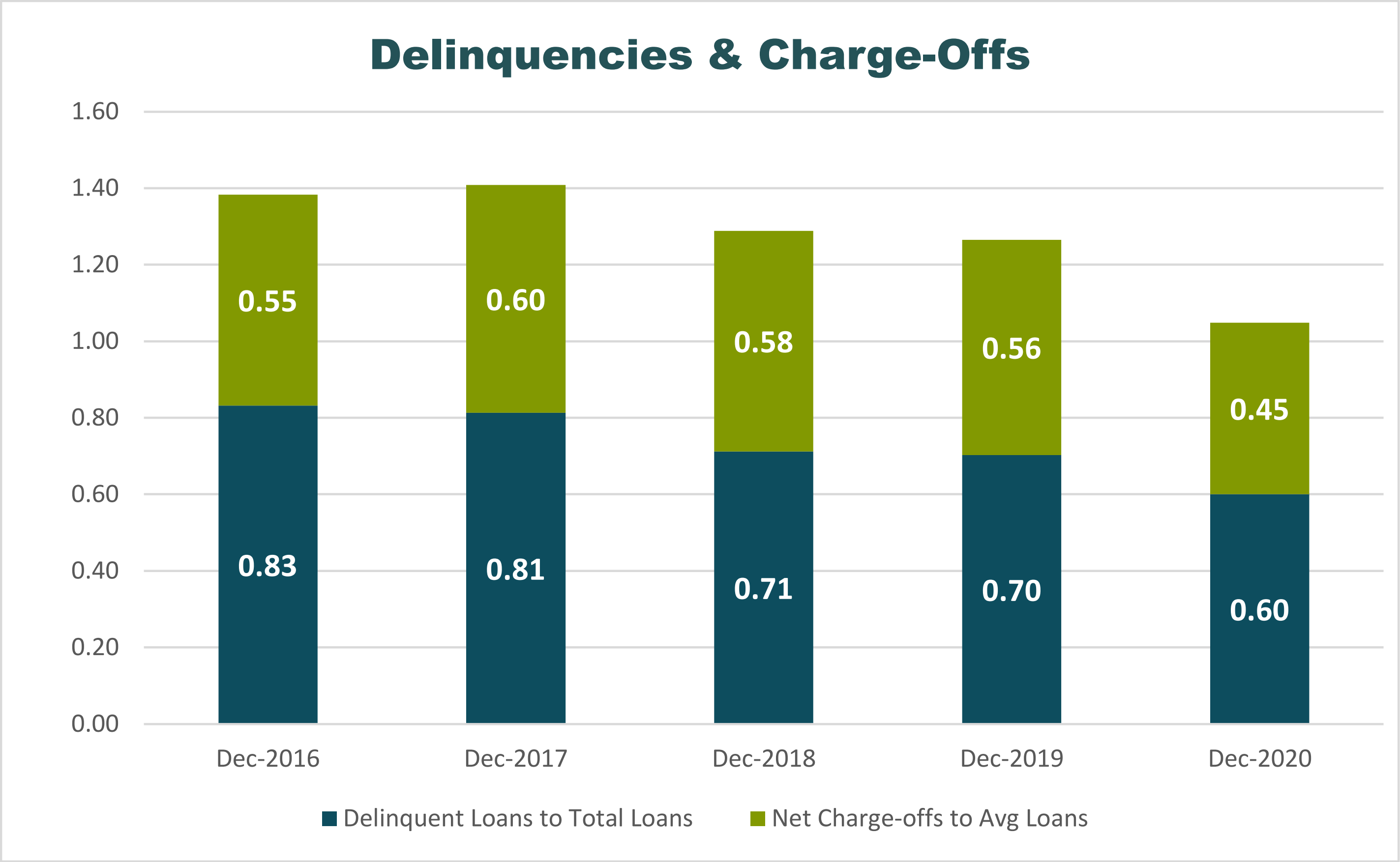
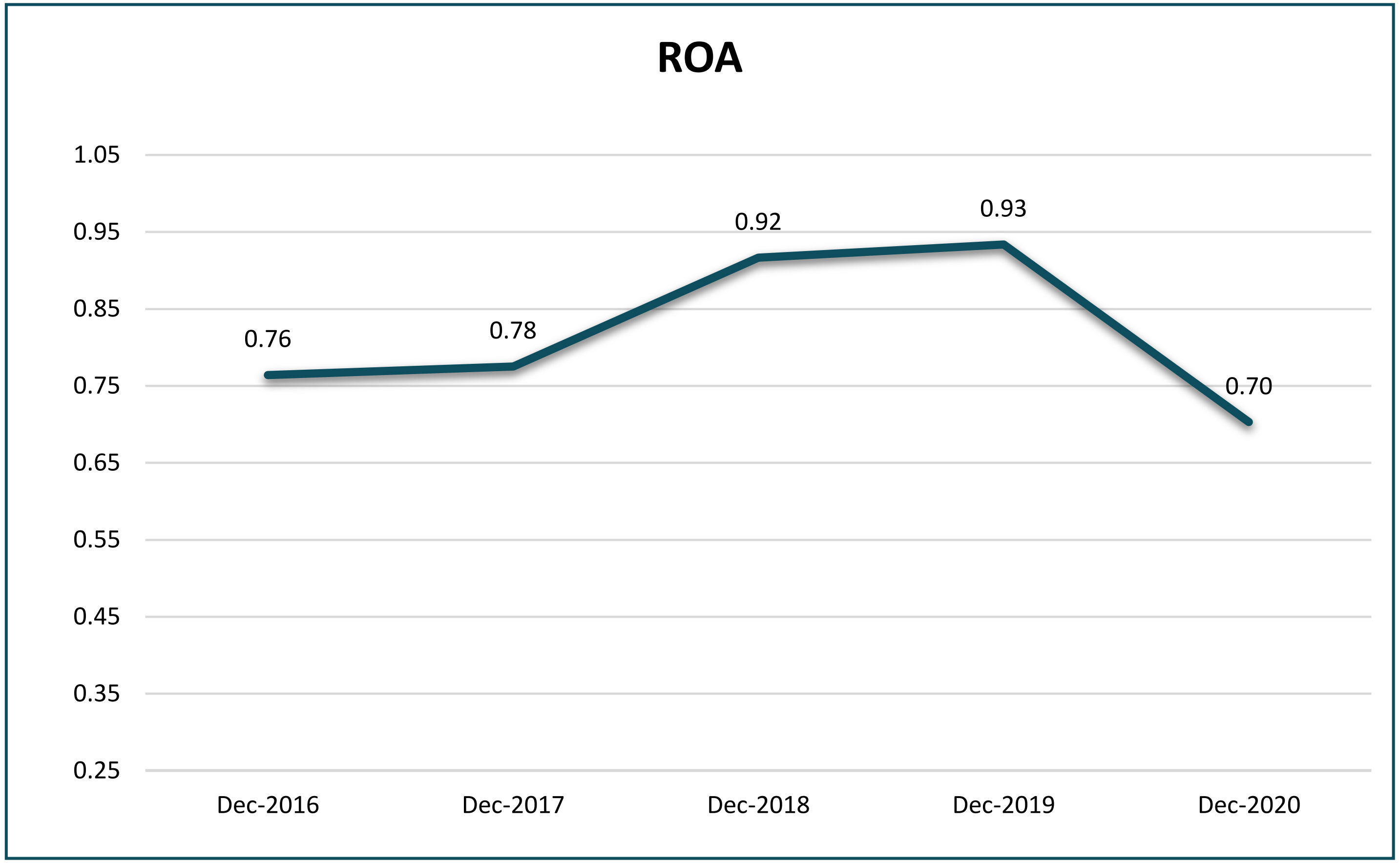
Liquidity Levels Rising



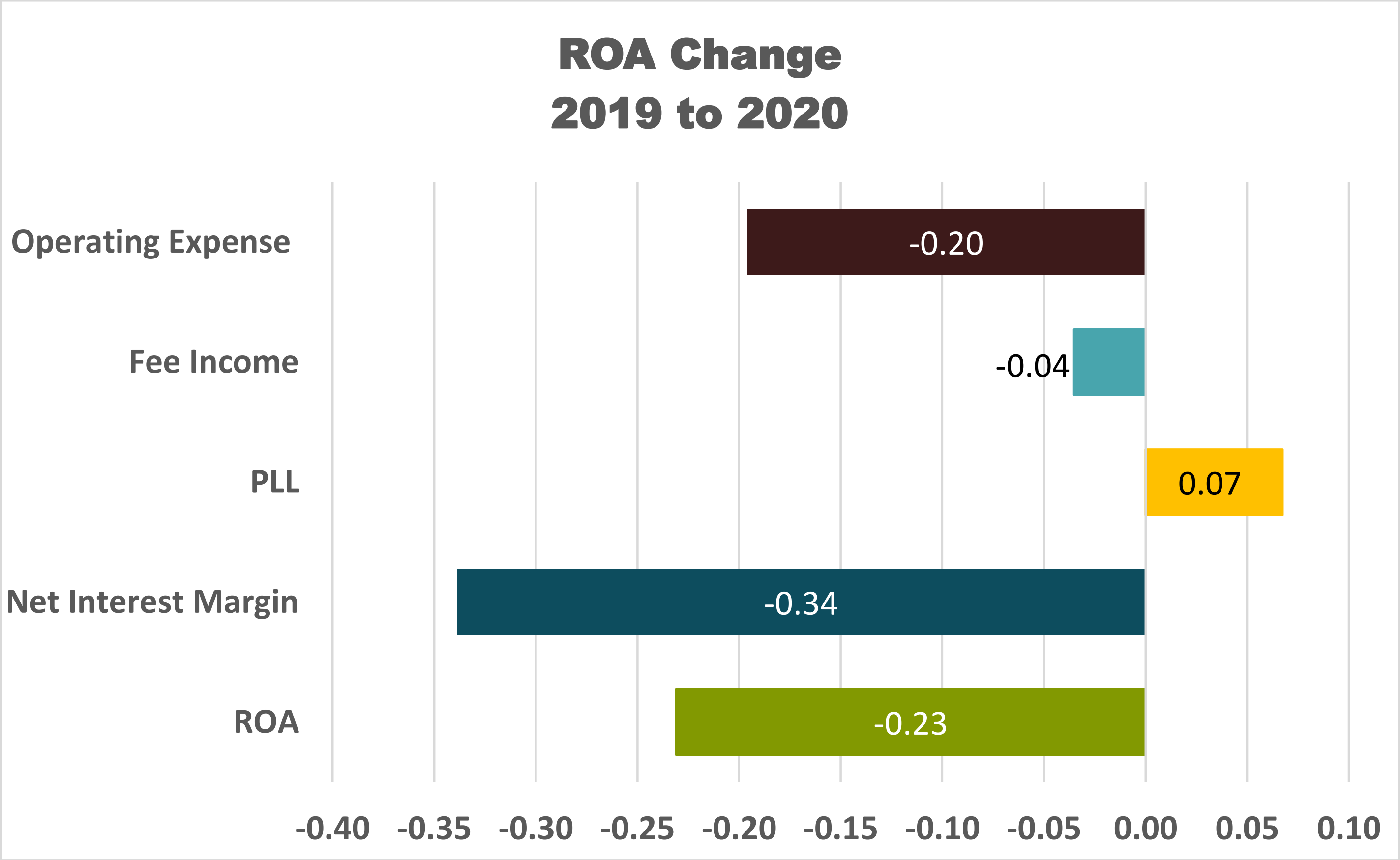
Asset Quality Remains Strong



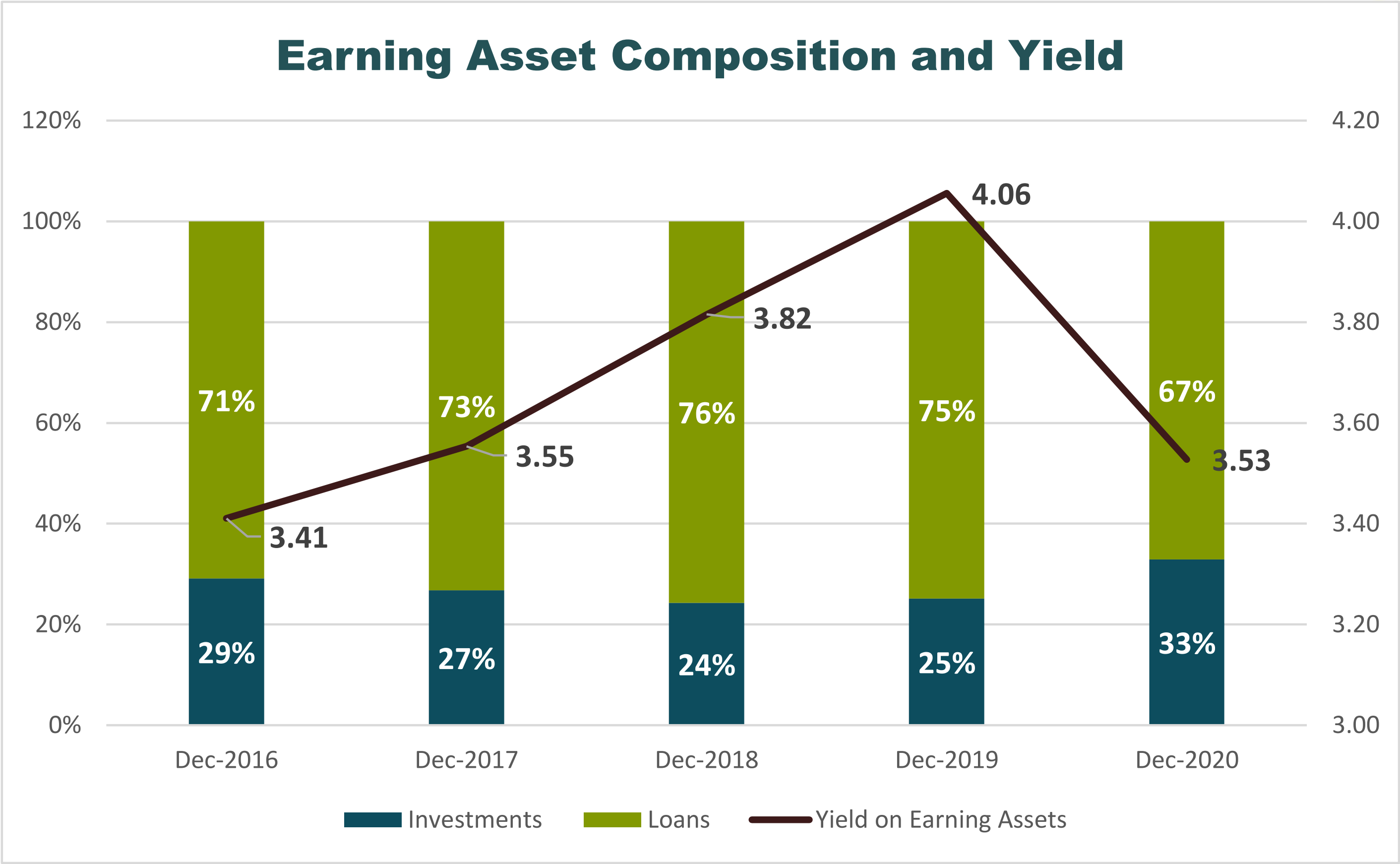
Downward Pressure on Earnings



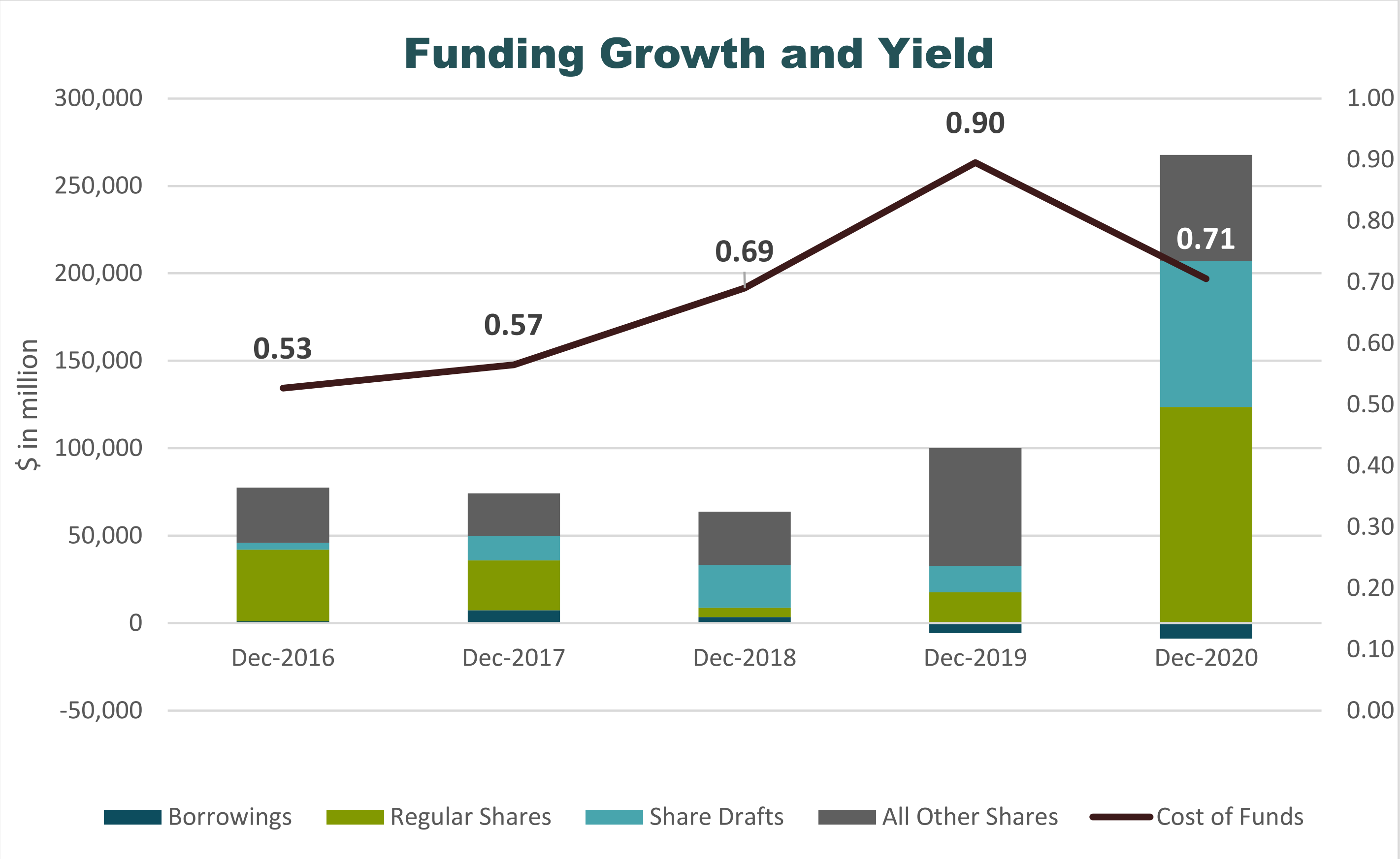
Net Interest Margin Pressure



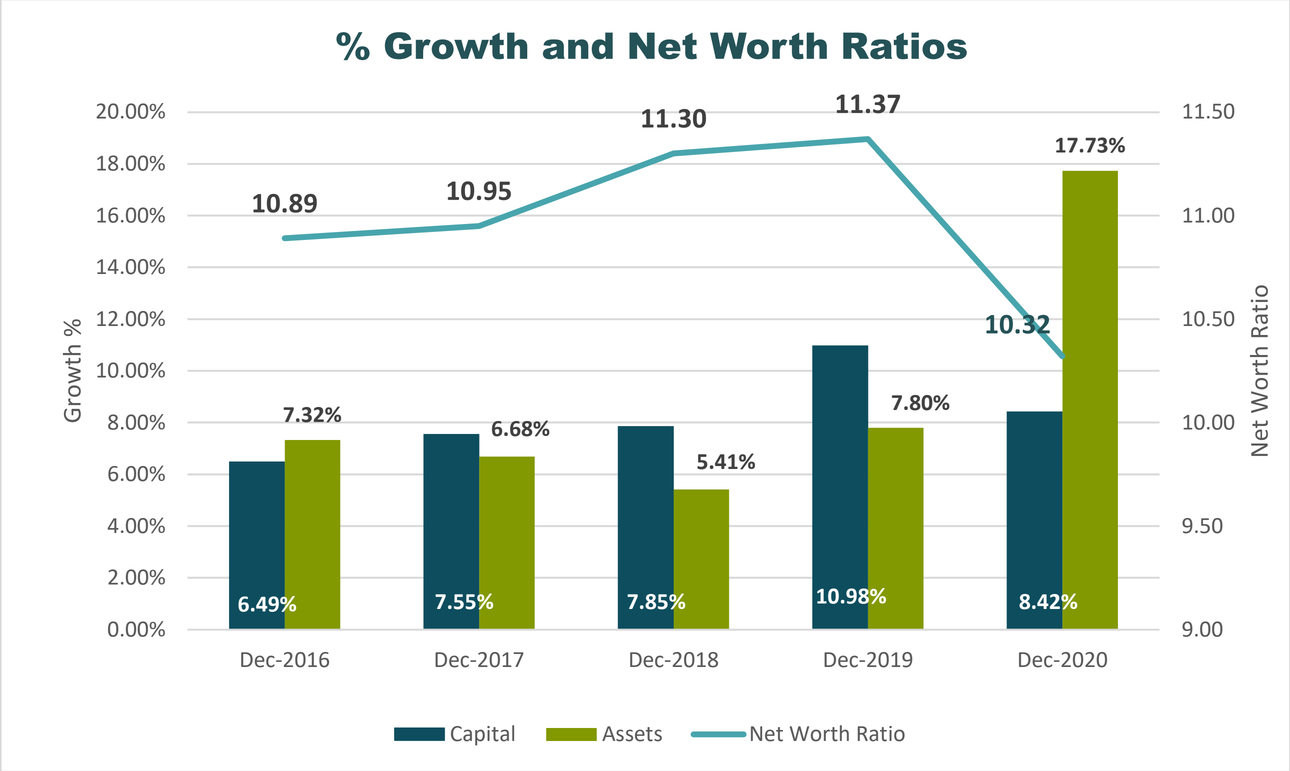
Shift in Asset Mix and Lower Yield



Growth Occurs in Lower Cost Shares



Declining Net Worth Ratios with Extreme Asset Growth Remain Well Capitalized



Pandemic & Great Recession

CU Industry	Great Recession 2007	2009	Change		2020 Pandemic 2019	2020	Change	
Net Worth Ratios	11.40	9.89	-1.51	↓	11.37	10.32	-1.05	↓
ROA	0.63	0.18	-0.45	↓	0.93	0.70	-0.23	↓
Net Interest Margin	3.10	3.21	0.11	↑	3.16	2.82	-0.34	↓
Investment Yield	4.77	2.63	-2.14	↓	2.36	1.35	-1.01	↓
Loan Yield	6.72	6.28	-0.44	↓	4.89	4.70	-0.19	↓
Cost of Funds	2.79	1.74	-1.05	↓	0.90	0.71	-0.19	↓
Cash & ST Investments	15.71	16.80	1.09	↑	12.83	18.40	5.57	↑
Loan to Share	83.58	76.05	-7.53	↓	83.95	73.23	-10.72	↓
Loan to Assets	70.01	64.71	-5.30	↓	70.72	63.03	-7.69	↓
PLL	0.44	1.13	0.69	↑	0.43	0.50	0.07	↑
FedFunds Target Rate	5.25	0.25	-5.00	↓	1.75	0.25	-1.50	↓
2 Year	3.05	1.14	-1.91	↓	1.57	0.12	-1.45	↓
10 Year Treasury	4.03	3.84	-0.19	↓	1.92	0.92	-1.00	↓

Key Issues Impacting Earnings and Capital

Key Issues – What the Trends Told Us

Margin Compression

- Investments – Balances Up and Yields Down
- Lower Loan to Asset Ratios & declining loan yields
- Deposit Rates Low

Lending and Loan Pricing

- Improved loan growth, but slower than pre-pandemic
- Pricing more competitive
- Mortgage refi boom over?

Key Issues

Deposit Surge

- How much will leave?
- If it leaves when?

Excess Liquidity

- What do I do with all this cash?
- How much do I need?
- Holding too much reduces earnings

Key Issues

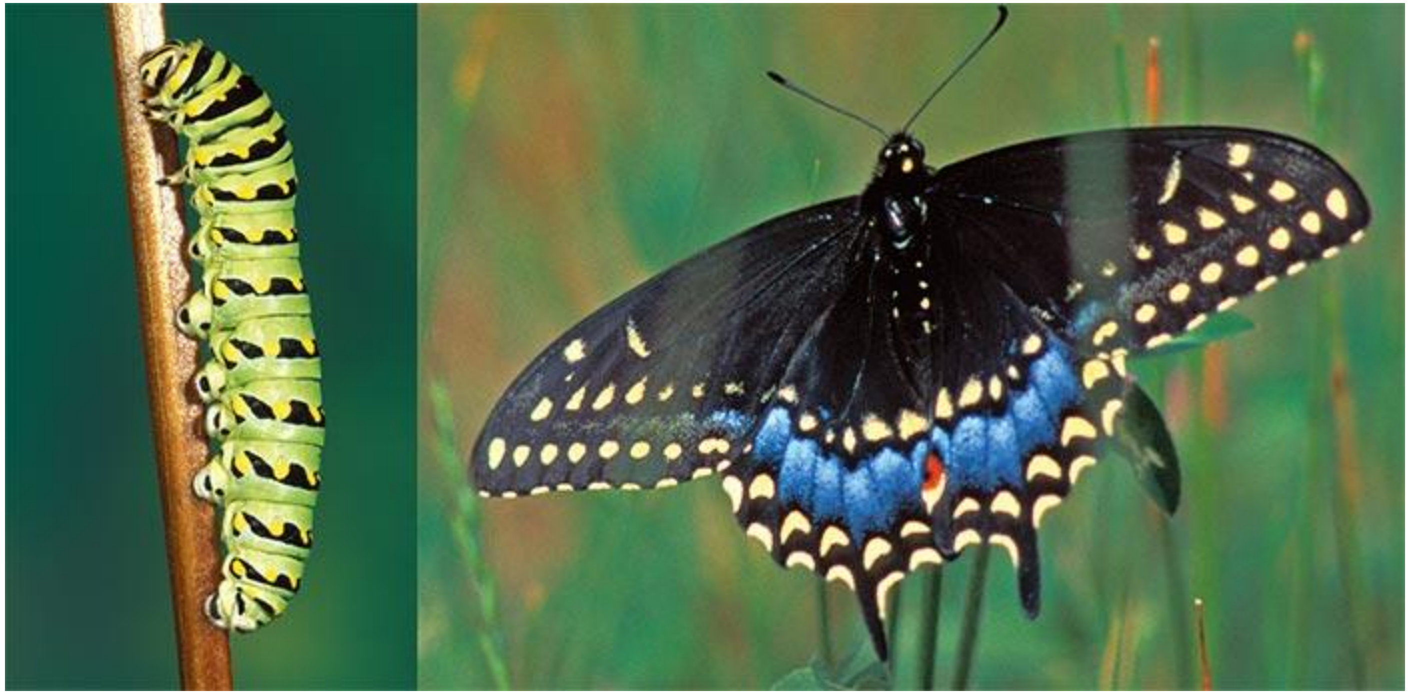
Monetary Policy

- Low short-term rates for foreseeable future
- Inflation concerns leading to steeper yield curve

Pandemic

- Vaccinations
- Case trends
- Consumer spending behavior
- Economic volatility

Why Dynamic ALM Modeling?



Young or Old Woman?

Static Balance Sheet	Dynamic Balance Sheet
No growth	Projected Growth
Current mix of assets and liabilities is constant	Shifting mix of assets and liabilities to match growth projections
Cash flow is reinvested in the same account at current rates	Cash flow invested based on growth projections and projected rate assumptions
Flat rates and instantaneous and parallel rate shocks	Most likely forecast, ramped rates, shift in yield curve

Dynamic Modeling Provides Insight

What will earnings be based upon forecasted loan and share growth?

Earnings & Capital under pressure. What will it take to improve and how long will it take?

New product. -How will this impact earnings & capital?

What if Deposits Runoff?

What if rates remains low?

What if cash remains high?

What if loan demand remains slow?

Current and Post-Pandemic Environment

Assess potential impact of environment → Develop potential strategies → Dynamic Modeling → Evaluate and Decide → Execute

Business Strategy – Scenario Analysis

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Scenario 1: Forecasting

Current Position

- Loan, investment, deposit and borrowing data residing in ALM model is data rich for modeling. Balance, coupon, payments, maturity, variable rate repricing.

Input

- Projections for Loan and Deposit Growth
- Loan Rates, Share Dividend Rates
- Projections for fee income, operating expenses & PLL
- Interest Rate forecast

Model Projection

- Net Interest Income
- Net Income

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Scenario 1: Forecasting

- **Improved accuracy in projecting interest income and expense**

New Auto Loans	Balance	Rate	Income
Beginning Balance	16,000,000	4.00%	640,000
Contractual Payments	(4,000,000)	4.00%	(160,000)
Prepayments	(2,000,000)	4.00%	(80,000)
New Volume	7,600,000	3.50%	266,000
Ending Balance	17,600,000	3.78%	666,000

How would you have budgeted interest income?

Scenario 1: Forecasting

- Provides cash flow overages/shortages to assist with liquidity planning
- Utilize built in market interest rates
- Starting with balance sheet targets provides insight on amount of new volume needed to meet these targets

Scenario 1: Forecasting

- **Easily run “what-if” analysis from the base forecast**
  - **What if loan growth doesn’t occur?**
  - **What if consumer spending goes crazy and deposits runoff?**
  - **What if inflation increases and Fed raises short-term rates?**
  - **What if I have to lower loan rates to grow loans?**

Scenario 2: What If - Hold Mortgage Loans

- **Credit Union originates and sells mortgage loans**
- **Consumer loan demand has slowed – mortgage demand is strong**
- **Cash balances have increased**
- **Net interest income and net income are declining**

What if we held the mortgage loans on our balance sheet?

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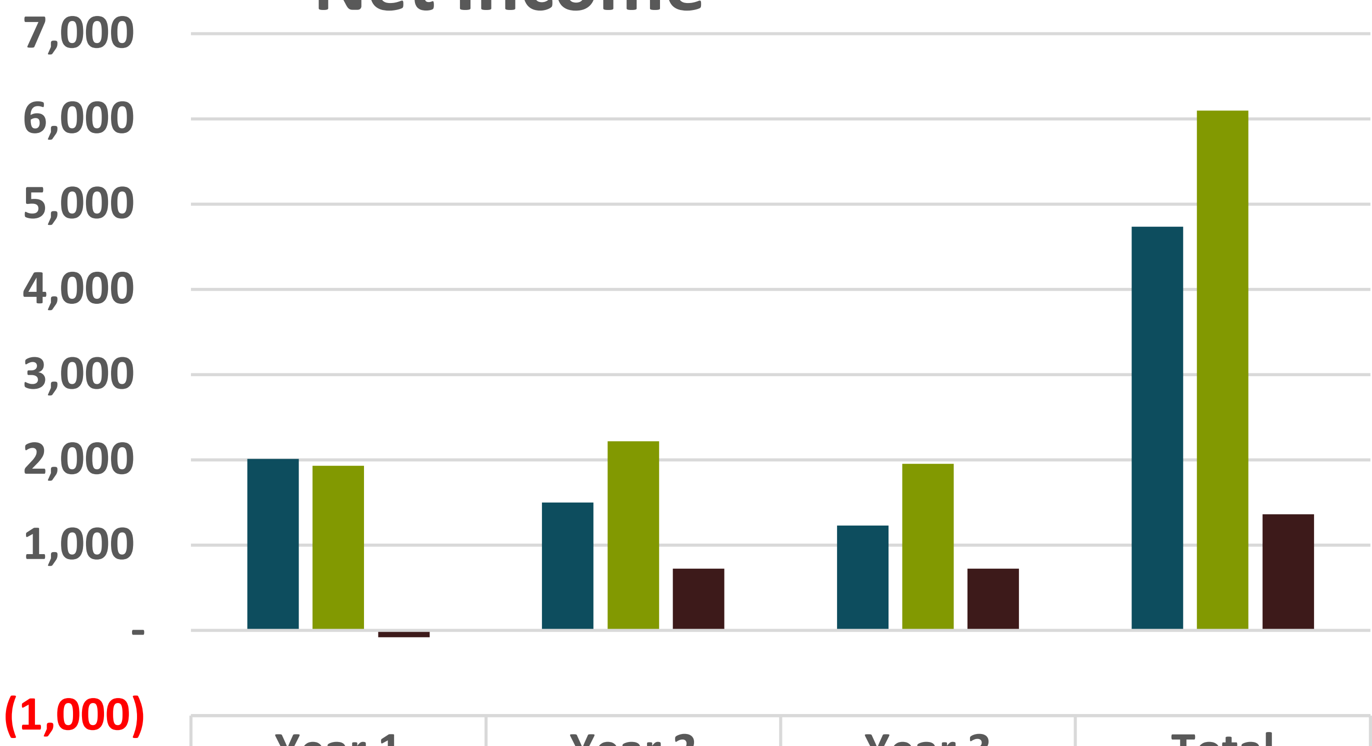
Scenario 2: What If - Hold Mortgage Loans

Assumptions:

- **Originate $2 million per month in 30-year mortgages @ 3.0% for 12 months.**
- **Funding provided from interest-bearing cash**
- **Lower non-interest income 1.5% x $2 million per month for loss of fee income.**
- **Increase allowance/provision for loan loss for loan growth $60k**

Net Income



	Year 1	Year 2	Year 3	Total
Static	2,009	1,498	1,229	4,736
Mortgage Growth Sim	1,927	2,218	1,952	6,096
Change	(82)	720	722	1,360

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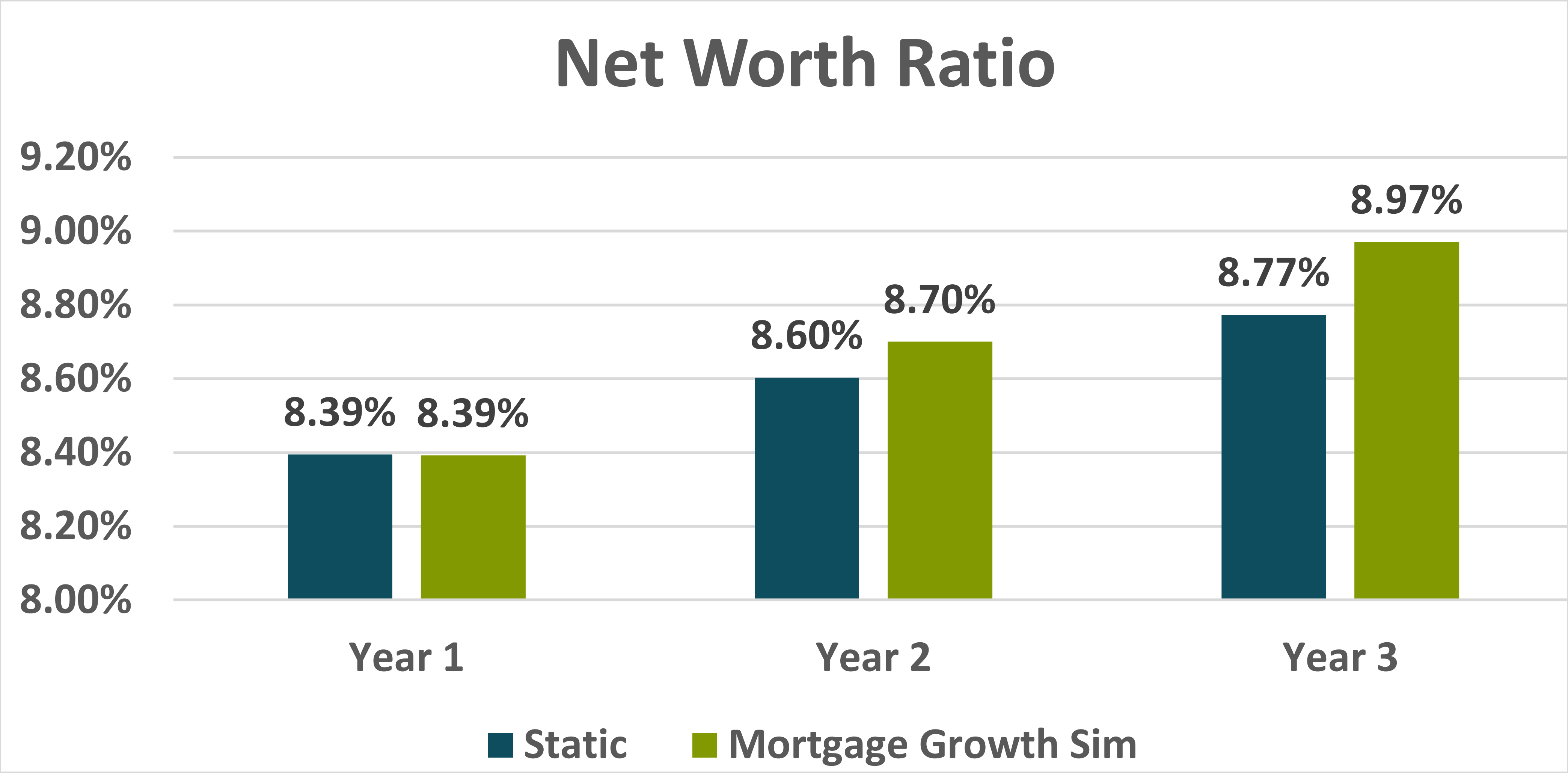
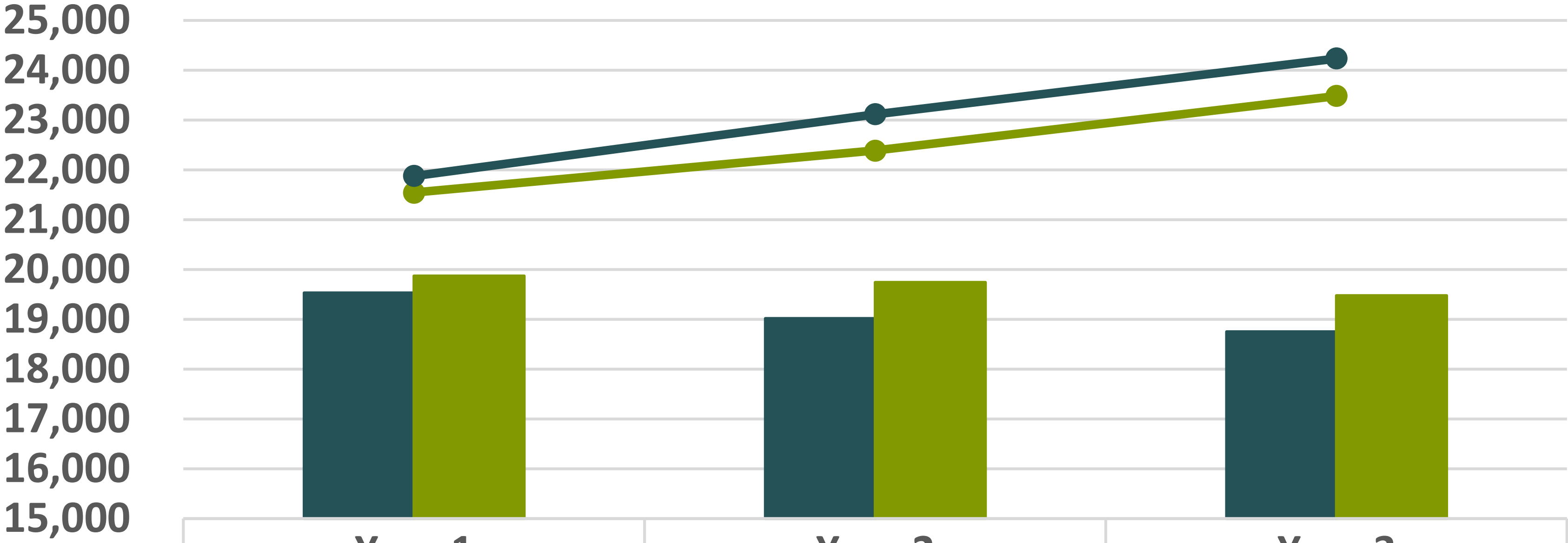
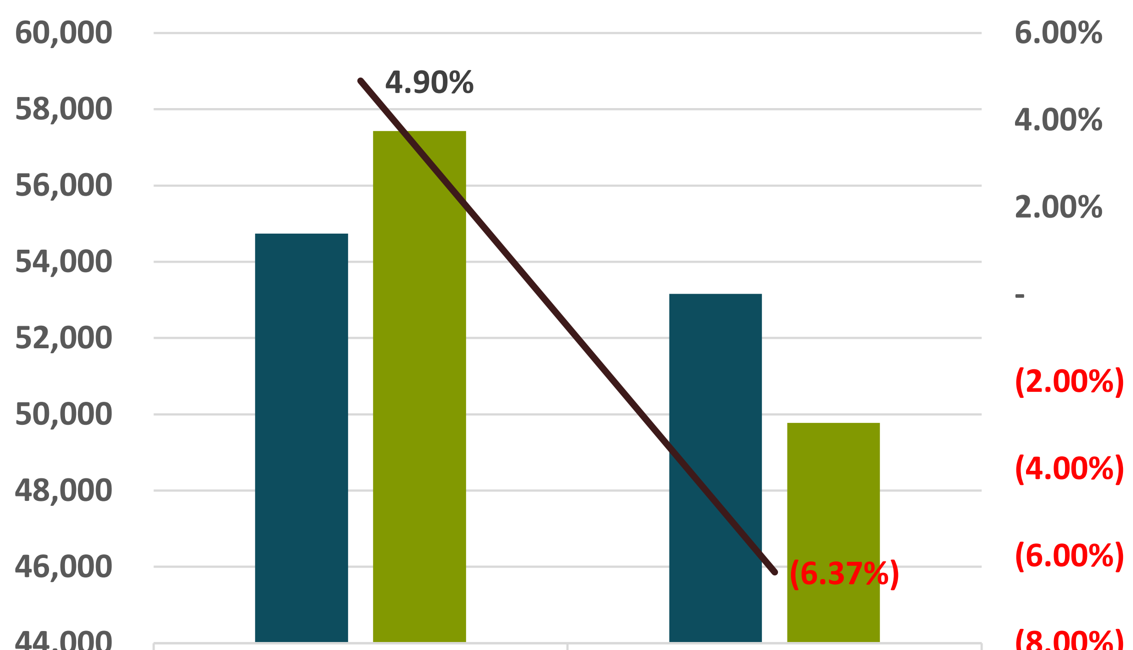

Net Worth Ratio
9.20%
9.00%
8.80%
8.60%
8.40%
8.20%
8.00%
8.39%
8.39%
8.60%
8.70%
8.77%
8.97%
Year 1
Year 2
Year 3
Static
Mortgage Growth Sim

Up 300 Risk to Net Interest Income



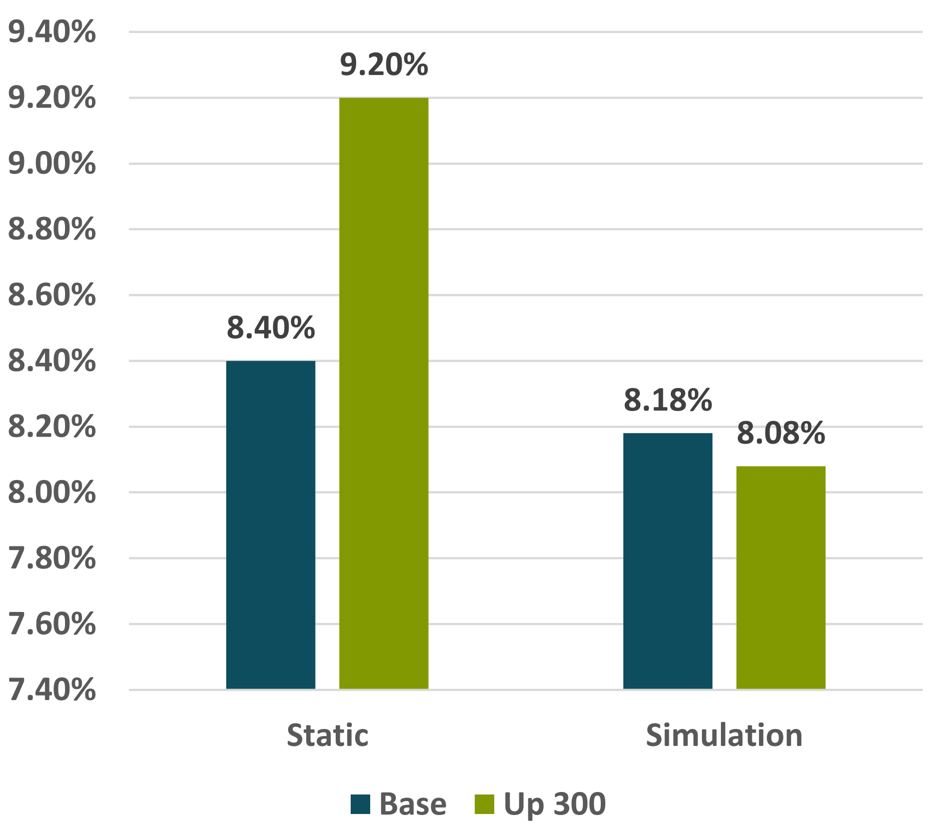
	Year 1	Year 2	Year 3
Base Static	19,534	19,023	18,754
Base Mtg Sim	19,872	19,743	19,477
Up 300 Static	21,546	22,389	23,487
Up 300 Mtg Sim	21,882	23,119	24,241

Net Economic Value



	Static	Hold Mortgages
NEV Base	54,744	53,160
NEV Up 300	57,428	49,775
% Change	4.90%	(6.37%)

NEV Ratio



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Scenario 2: What If - Hold Mortgage Loans

- **Earnings and Capital improve over the 3-year forecast period**
- **Earnings and Capital improve in rising rates**
- **Risk to Net Economic Value – risk is low and within policy limits**

Individual Credit Union Decision

Scenario 3: What If Deposit Surge Runoff

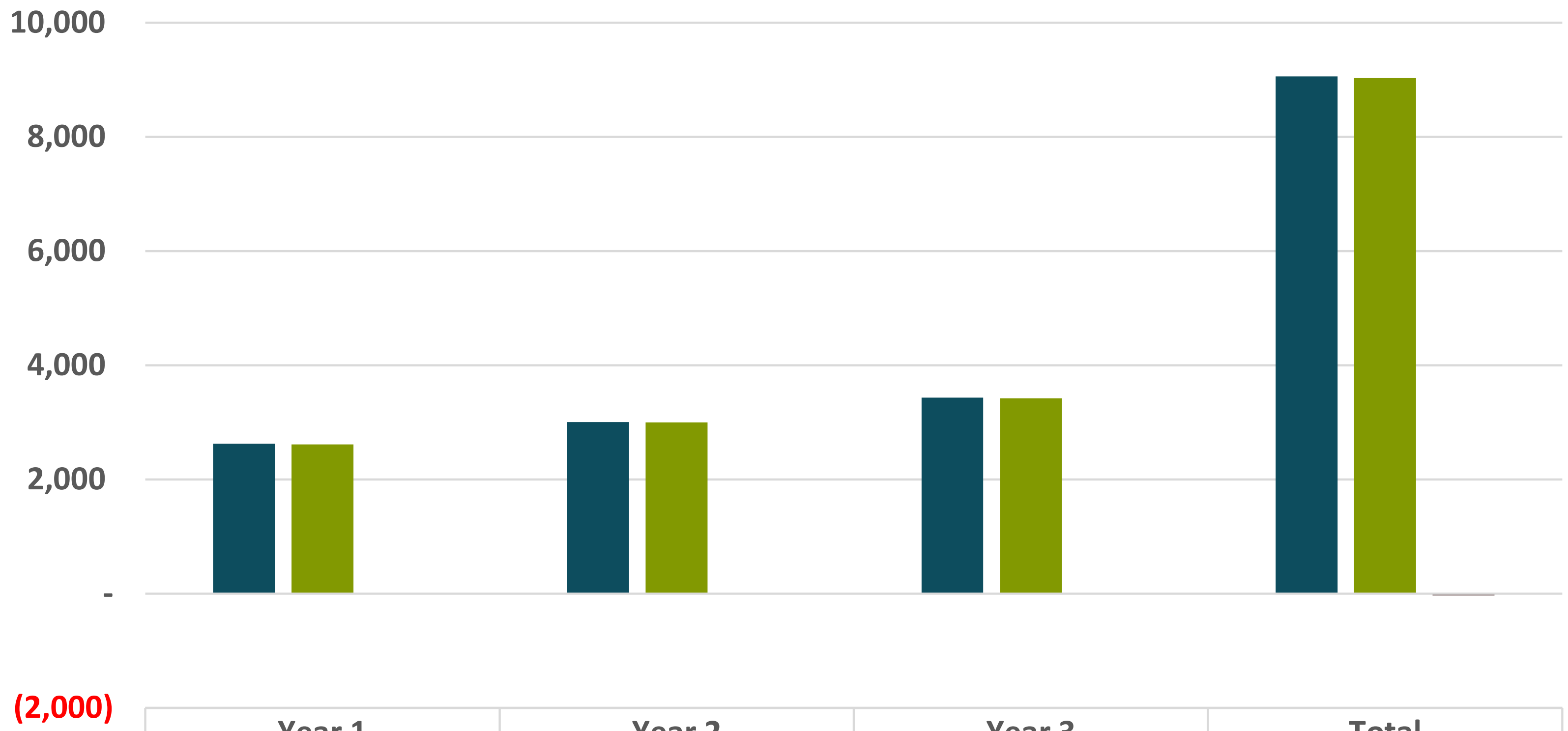
- **Current CU Snapshot**
  - **ROA - 0.78%**
  - **Net Worth Ratio – 9.84%**
  - **Loan to Deposit Ratio – 91.91%**
  - **Cash & Short-Term Investments/Assets – 9.41%**
  - **Borrowings & Non-member deposits/Assets – 5.38%**
- **Budget based on 5% loan and share growth**

CU is concerned about surge deposit runoff

Scenario 3: What If - Deposit Surge Runoff

- Assumptions
  - $25 million or 15% NMS surge runoff over next 6 months; 2.5% growth next 6 months; 5% growth in Years 2 and 3.
  - 90% of certificate shares are maintained at maturity – no growth due to low-rate environment
  - Cash flow shortage funded with a 2-year borrowing at 0.45%
  - Maintained original budgeted loan growth of 5.0%

Net Income



	Year 1	Year 2	Year 3	Total
Budget	2,623	3,007	3,433	9,063
Surge Runoff	2,613	2,996	3,419	9,029
Change	(10)	(11)	(14)	(35)

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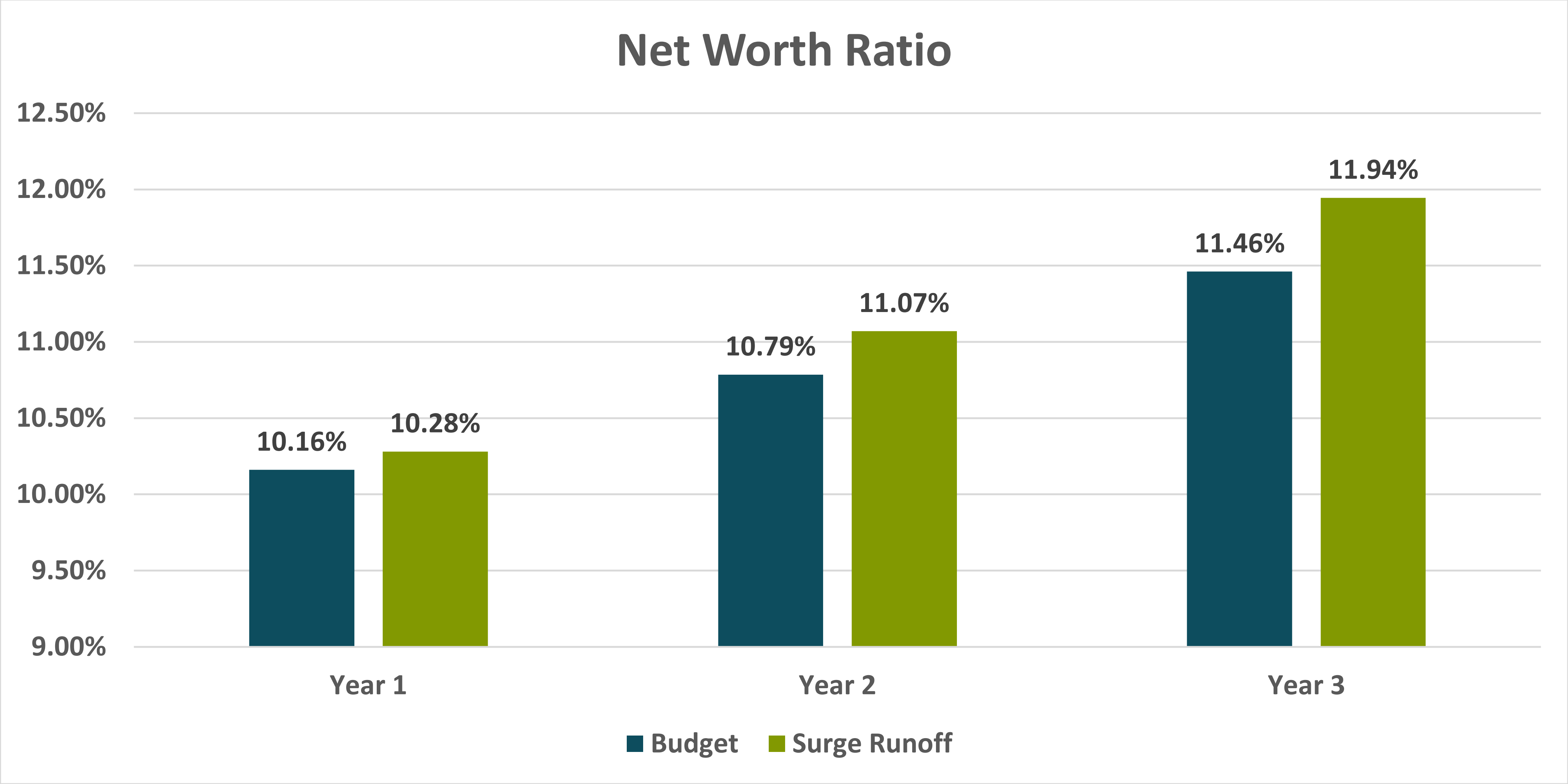
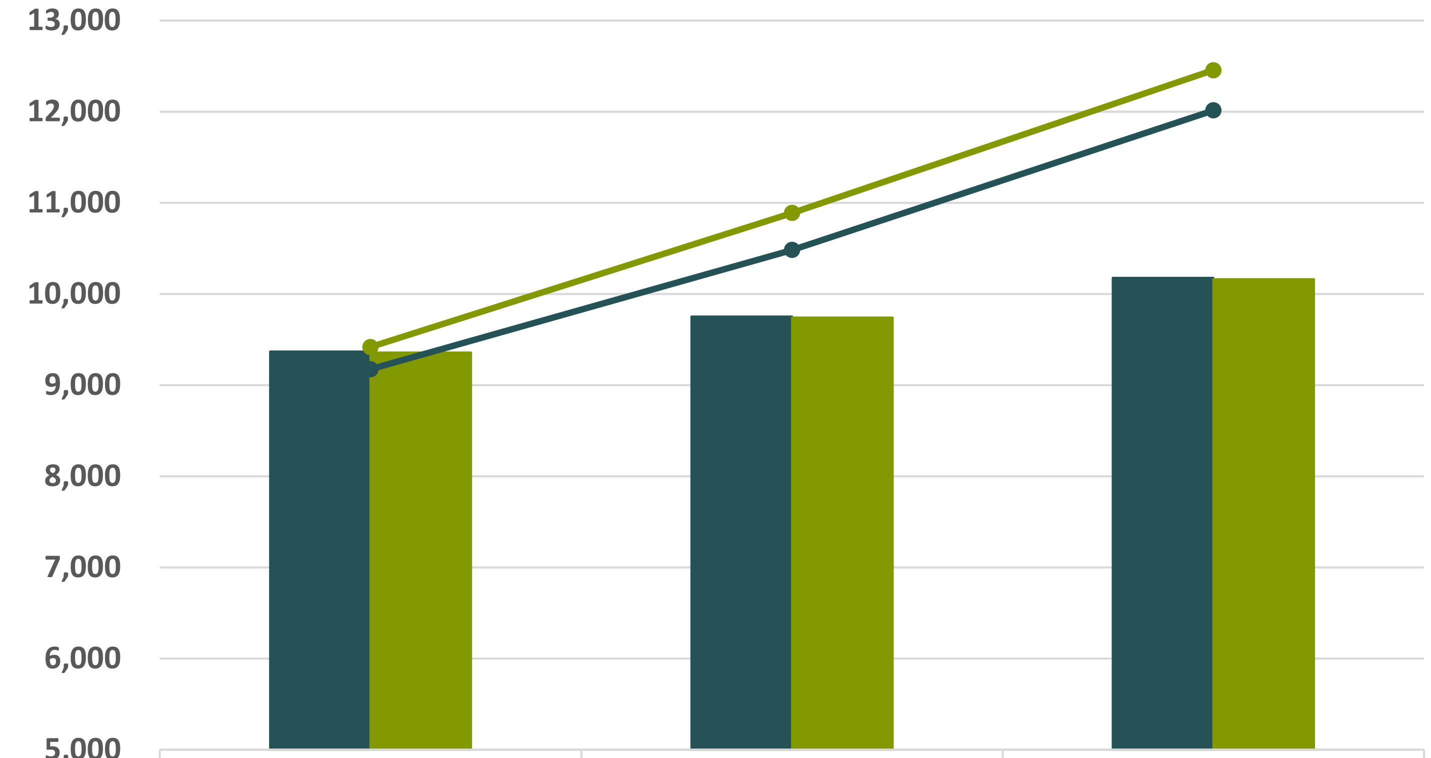

Net Worth Ratio
12.50%
12.00%
11.50%
11.00%
10.50%
10.00%
9.50%
9.00%
10.16%
10.28%
10.79%
11.07%
11.46%
11.94%
Year 1
Year 2
Year 3
Budget
Surge Runoff

Up 300 Risk to Net Interest Income



	Year 1	Year 2	Year 3
Base Budget	9,367	9,752	10,178
Base Surge Runoff	9,358	9,741	10,164
Up 300 Budget	9,418	10,888	12,454
Up 300 Surge Runoff	9,173	10,483	12,013

Liquidity Ratios	Budget	Surge Runoff	Change
Year 1			
Loan/Share	90.35%	102.05%	11.70%
Cash & Short-Term Investments/Assets	10.55%	9.08%	-1.47%
Borrowings & Non-member Deposits/Assets	5.23%	13.86%	8.63%
Year 2			
Loan/Share	90.33%	103.53%	13.20%
Cash & Short-Term Investments/Assets	12.20%	9.33%	-2.87%
Borrowings & Non-member Deposits/Assets	5.20%	13.32%	8.12%
Year 3			
Loan/Share	90.32%	104.96%	14.64%
Cash & Short-Term Investments/Assets	12.63%	8.40%	-4.23%
Borrowings & Non-member Deposits/Assets	5.16%	12.78%	7.63%

Scenario 3: What If - Deposit Surge Runoff

- **Minimal Impact to Base Case Earnings or Capital**
- **Reduced Earnings in Rising Rates, but still strong**
- **Liquidity**
  - **Increased reliance on borrowings**
  - **Evaluation of available wholesale funding alternatives**

CU identified a liquidity risk, evaluated the impacted to earnings, capital and liquidity and has foresight if event occurs.

Shifting Perspectives

Regulatory Compliance

Strategy & Decision Making

Takeaways

Shift perspective and use ALM model as decision-making tool

- **Margin Compression**
- **Deposit Surge**
- **High levels of liquidity**
- **Low loan demand**
- **Low market rates**
- **Pandemic**