



Interest Rate Risk:

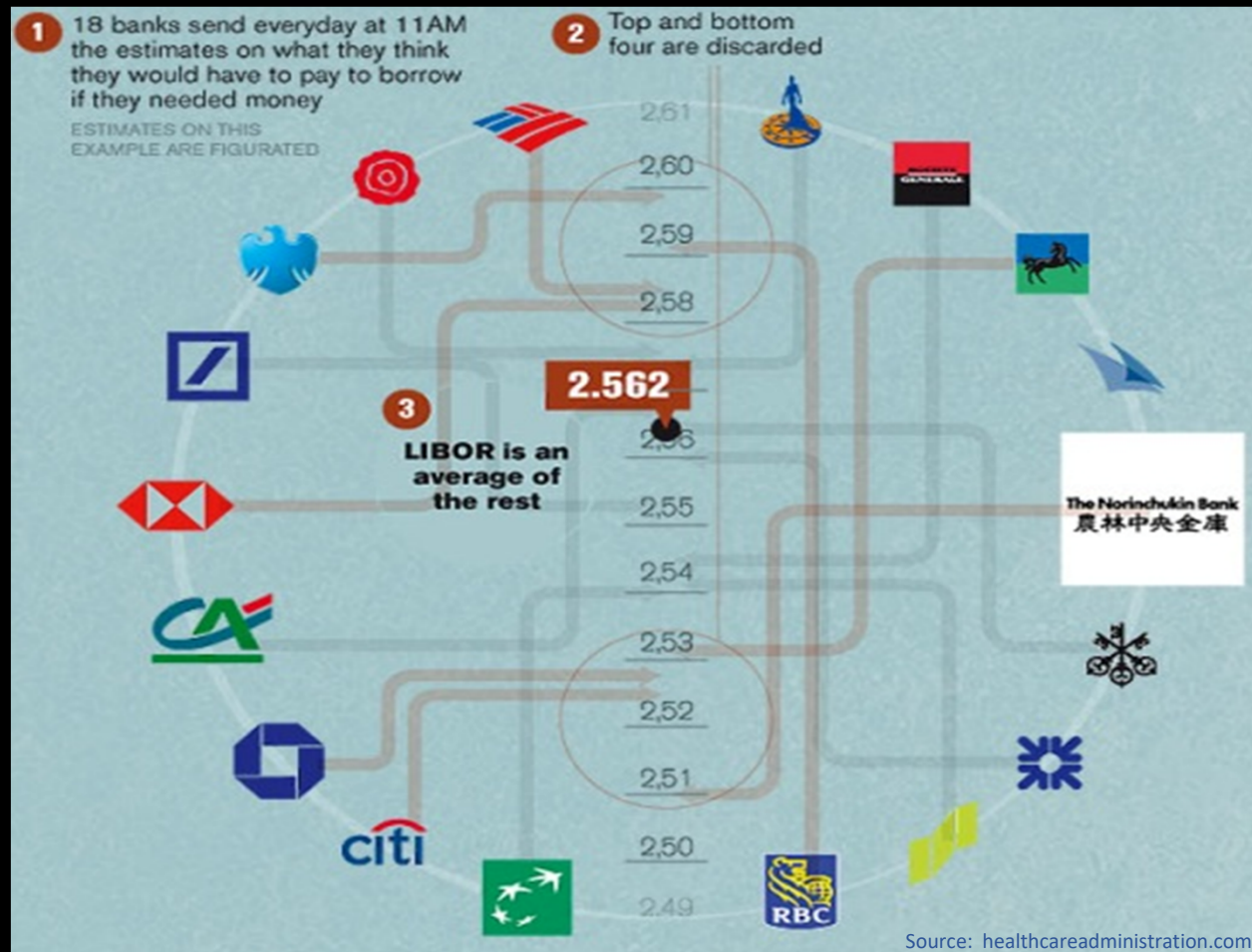
Your Institution's Exposure to Libor

How Important is the Libor Benchmark?

- Libor is the benchmark for over \$800 Trillion-Worth in financial instruments



How Is the Libor Rate Determined?



The
Economist

JULY 7TH-13TH 2012

Economist.com

Higgs boson: a giant leap for science
In praise of America's charter schools
Volkswagen overtakes the rest
A power struggle at the Vatican
When Lonesome George met Nora

BANKSTERS

Britain's price-fixing scandal and its global impact







Alternative Reference Rates Committee

The Alternative Reference Rates Committee (ARRC) is a group of private-market participants convened by the Federal Reserve Board and the New York Fed to help ensure a successful transition from U.S. dollar (USD) LIBOR to a more robust reference rate, its recommended alternative, the Secured Overnight Financing Rate (SOFR). The ARRC is comprised of a diverse set of private-sector entities that have an important presence in markets affected by USD LIBOR and a wide array of official-sector entities, including banking and financial sector regulators, as ex-officio members.

Alternative Reference Rates Across the Globe

Jurisdiction					
IBORs	USD LIBOR	GBP LIBOR	EURIBOR, Euro LIBOR	CHF LIBOR	JPY LIBOR, JPY TIBOR, EUROYENTIBOR
Working Group	Alternative Reference Rate Committee (ARRC)	Working Group on Sterling Risk-Free Reference Rates	The Working Group on Euro Risk-Free Rates	The National Working Group on Swiss Franc Reference Rate (NWG)	Study Group on Risk-Free Reference Rates
ARR	Secured overnight financing rate (SOFR)	Reformed Sterling overnight index average (SONIA)	Euro short-term rate (€STR)	Swiss average rate overnight (SARON)	Tokyo overnight average rate (TONA)
Secured vs. Unsecured	Secured	Unsecured	Unsecured	Secured	Unsecured
Description ²	Covers multiple overnight repo market segments	Covers overnight wholesale deposit transactions	Captures overnight wholesale deposit transactions	Reflects interest paid on interbank overnight repo	Captures overnight call rate market
ARR Administrator	Federal Reserve Bank of New York (FRBNY)	Bank of England	European Central Bank	SIX Swiss Exchange	Bank of Japan
Term Structure	Development of forward-looking term rate by end 2021	Production of a term rate as soon as practicable, if robust, in order to facilitate transition in certain cash markets	Feedback on public consultation on derivatives-based term rate as a fallback rate to EURIBOR was viewed as essential for certain cash markets	Derivatives-based term fixing not feasible; recommendation to use a compounded SARON wherever possible	To be discussed—unique transition challenges due to negative interest rate
Transition Plan Published	Yes	Yes	No	No	No

Source: SimCorp

LIBOR vs SOFR

LIBOR publishes multiple terms 1mo, 3mo, 1yr

LIBOR is a forward-looking rate

LIBOR is an unsecured rate

LIBOR rates are fixed @ start date

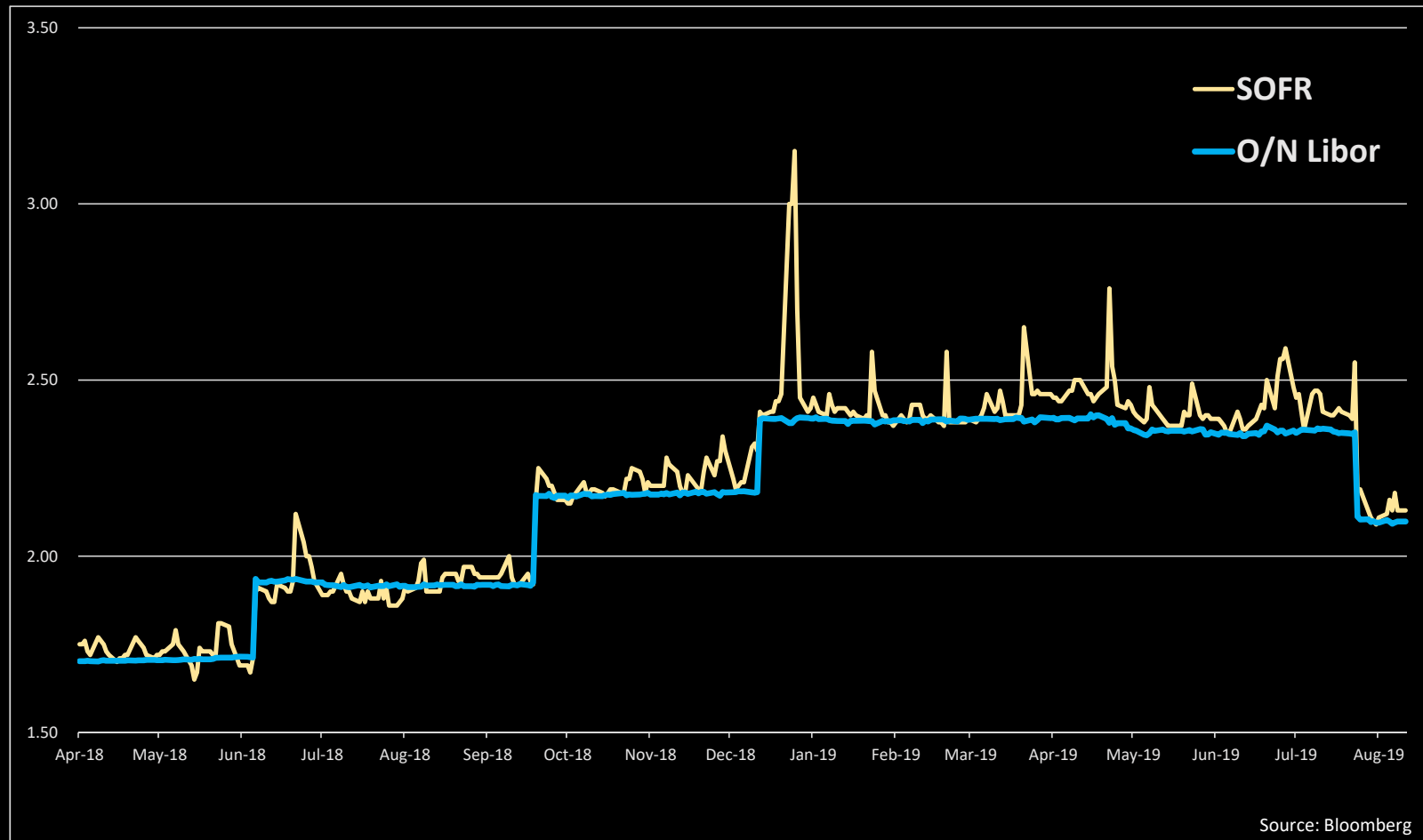
SOFR publishes overnight rate

SOFR is a backward-looking rate

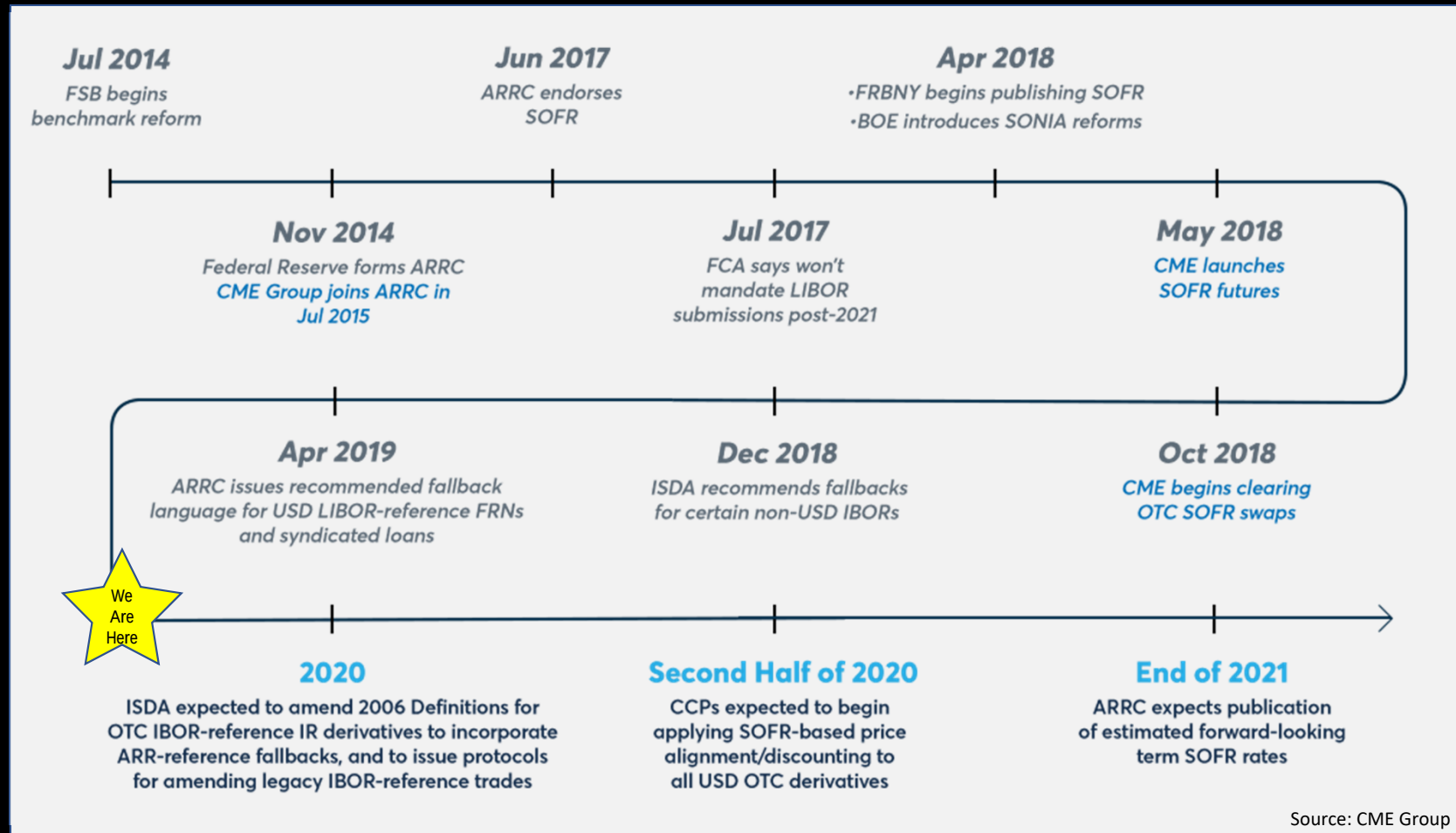
SOFR is a secured transaction rate

SOFR rate floats each day

Secured Overnight Financing Rate & Overnight Libor



The BIG Transition to SOFR



Who is issuing SOFR indexed debt?



Replacement Index Fallback Contract Language

- Bilateral Business Loans
 - Hardwired Approach
 - Amendment Approach
- Syndicated Loans
 - Hardwired Approach
 - Amendment Approach
- Adjustable Rate Mortgages
- Floating Rate Notes
- Securitizations

Source: ARRC

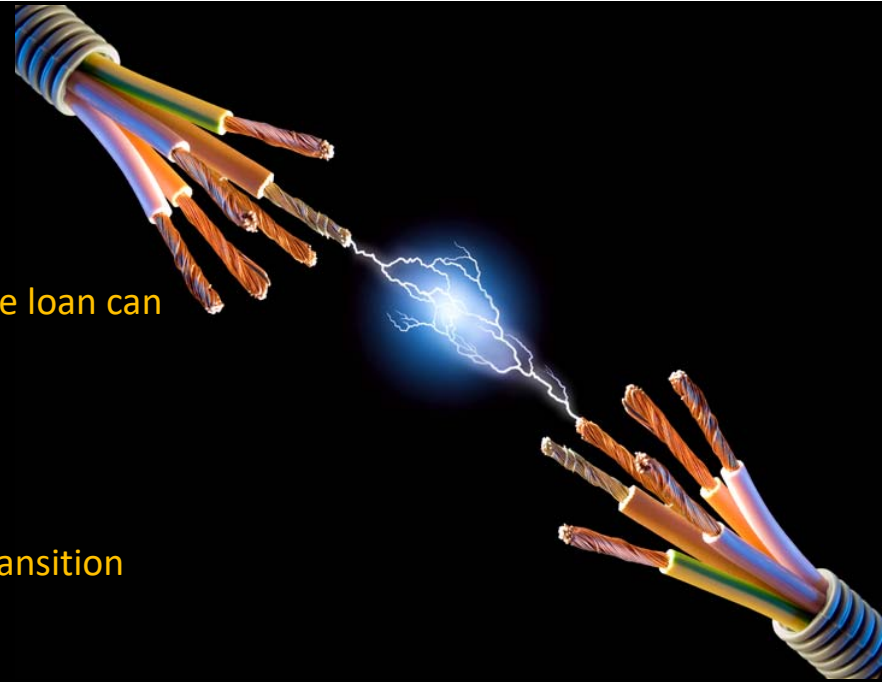
Hardwired Approach

Fallback language is built into the original credit agreement so that the loan can automatically convert to a new rate in the event that a trigger occurs.

Pros: Provides definitive triggers & decision-making sequences for transition
Not subject to manipulation on transition date
Easily scalable on transition date

Cons: Requires counterparties to agree to a rate that does not yet exist

Mitigating Factor: including language that allows for upward/downward adjustments to SOFR based on prevailing standards available on transition date.



Amendment Approach

Following a trigger event, the bank group enables a streamlined amendment to replace Libor.

Pros: Does not requires counterparties to agree to a rate that does not yet exist
Provides lender broad discretion to select a benchmark rate and adjustments after considering the prevailing standards available on the transition date.

Cons: Subject to potential manipulation on transition date
Difficulty transitioning large volume of loans on transition date (bespoke)

Mitigating Factor: Switching loans before Libor cessation on transition date



Bilateral Business Loans

Benchmark Replacement Waterfall

Step 1a Term SOFR + Adjustment

Step 1b Next Available Term SOFR + Adjustment

Step 2 Compounded SOFR + Adjustment

Step 3 Lender Selected Rate + Adjustment

Syndicated Loans

Benchmark Replacement Waterfall

Step 1a Term SOFR + Adjustment

Step 1b Next Available Term SOFR + Adjustment

Step 2 Compounded SOFR + Adjustment

Step 3 Borrower & Administrative Agent Selected Rate + Adjustment

Adjustable Rate Mortgages

Benchmark Replacement Waterfall

Step 1 Replacement index selected or recommended by the Federal Reserve Board, the Federal Reserve Bank of New York, or a committee endorsed or convened by the Federal Reserve Board or the Federal Reserve Bank of New York

Step 2 Replacement index determined by the Note Holder

Floating Rate Notes

Benchmark Replacement Waterfall

Step 1 Term SOFR + Adjustment

Step 2 Compounded SOFR + Adjustment

Step 3 Relevant Governmental Body Selected Rate + Adjustment

Step 4 ISDA Fallback Rate + Adjustment

Step 5 Issuer or its Designee Selected Rate + Adjustment

Securitizations

Benchmark Replacement Waterfall

Step 1 Term SOFR + Adjustment

Step 2 Compounded SOFR + Adjustment

Step 3 Relevant Governmental Body Selected Rate + Adjustment

Step 4 ISDA Fallback Rate + Adjustment

Step 5 Transaction Specific Fallback Rate + Adjustment

Preparation Promotes Confidence

IRR:

- Identify existing LIBOR balance sheet exposures
- Examine fallback language in existing contracts. Is there a need for renegotiation?
- Create fallback language, with guidance from ARRC, to ensure a smooth transition.
- Does your IRR Model have ability to transition loans from LIBOR to SOFR.

Capital:

- Impact on OCI from existing LIBOR exposure and estimated SOFR exposure.

Liquidity:

- Loans without LIBOR replacement provisions may have lower collateral value.





What are common approaches to the ALCO process?

*First
Approach*

Economy
and
Rates

Economy
and
Rates

Interest
Rate Risk

*Economist
Approach*

Economy
and
Rates

Economy
and
Rates

Interest
Rate Risk

*Second
Approach*

Economy
and Rates

Interest
Rate Risk

Liquidity

*Economist
Approach*

Economy
and
Rates

Economy
and
Rates

Interest
Rate Risk

*IRR Vendor
Approach*

Economy
and Rates

Interest
Rate Risk

Liquidity

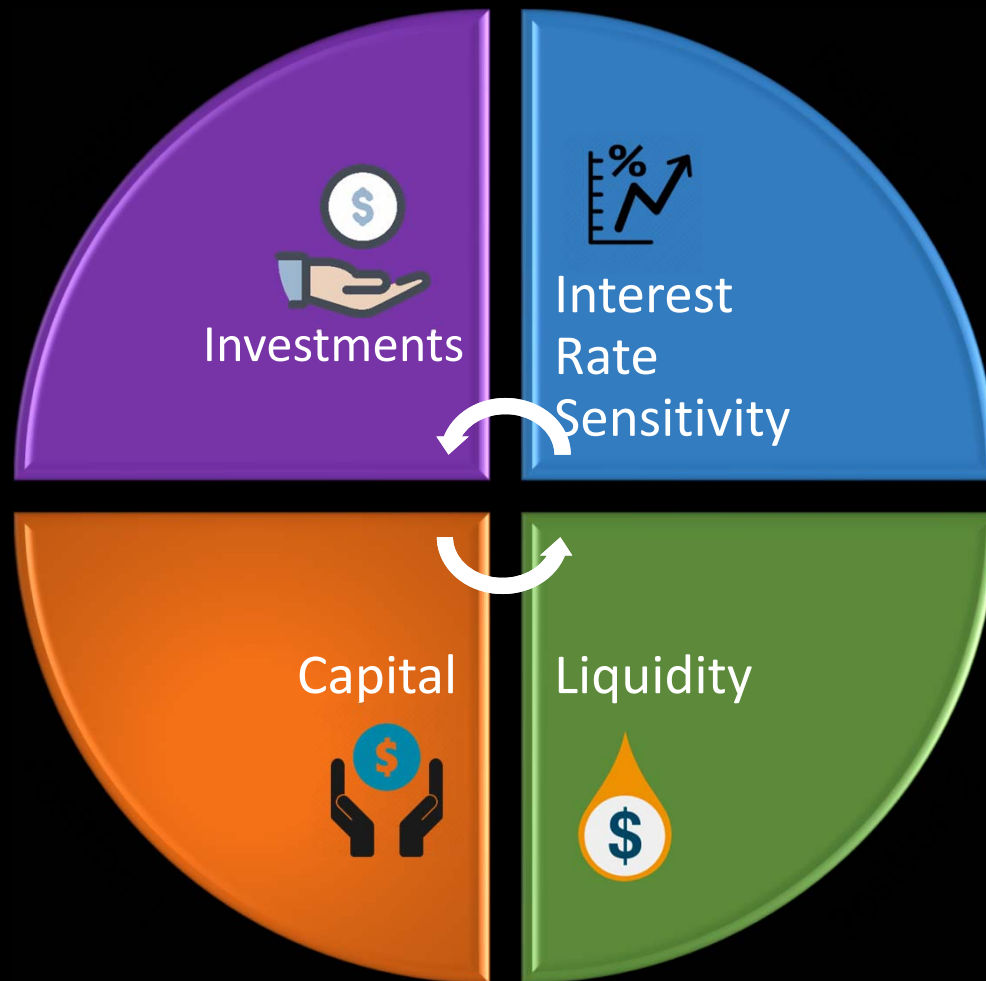
*Third
Approach*

Economy
and
Rates

Interest
Rate Risk

Investments

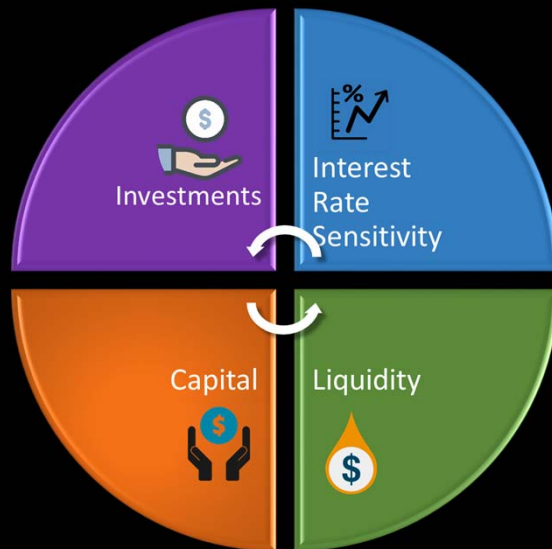
What should an ALCO process look like?



- Study the Past
- Monitor the Present
- Prepare for the Future



STUDY THE PAST



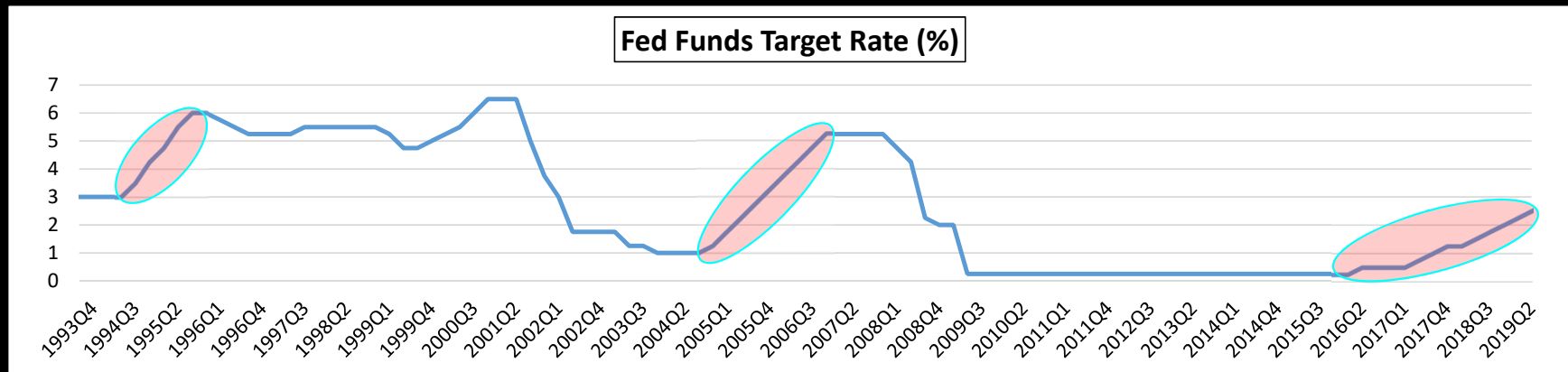
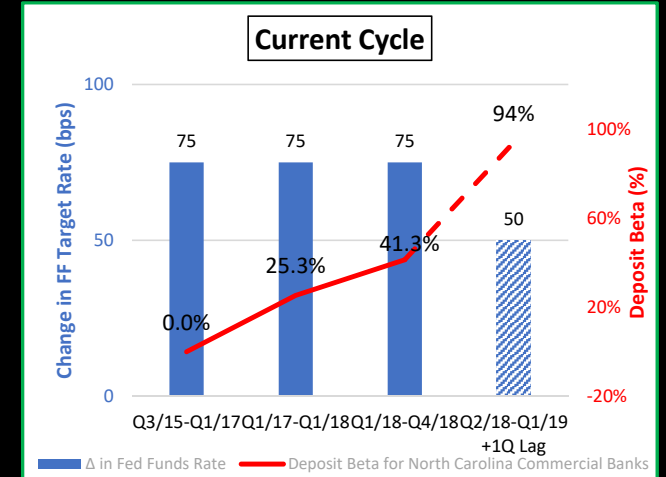
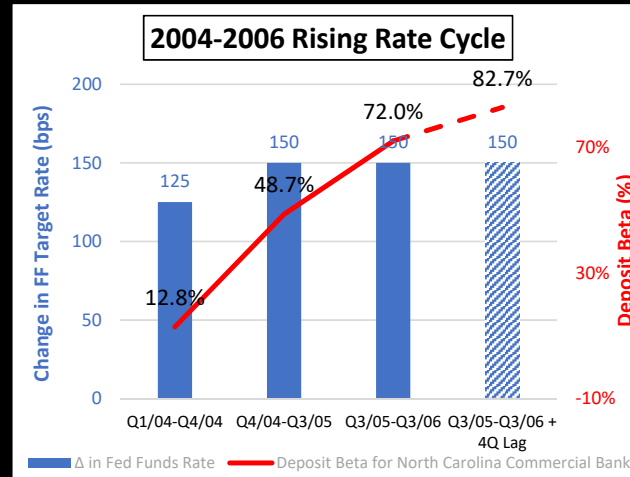
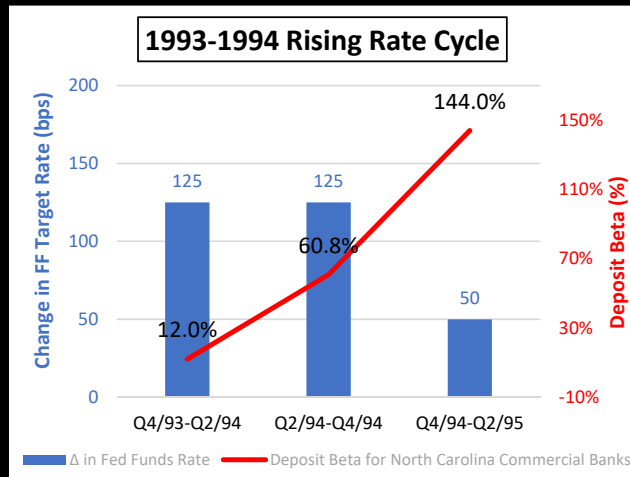
■ What Happened?

- Trend Analysis
- Historical Ratios
- Peer Comparison
- Balance Sheet Mix
- Rate Movements
- Spread Changes

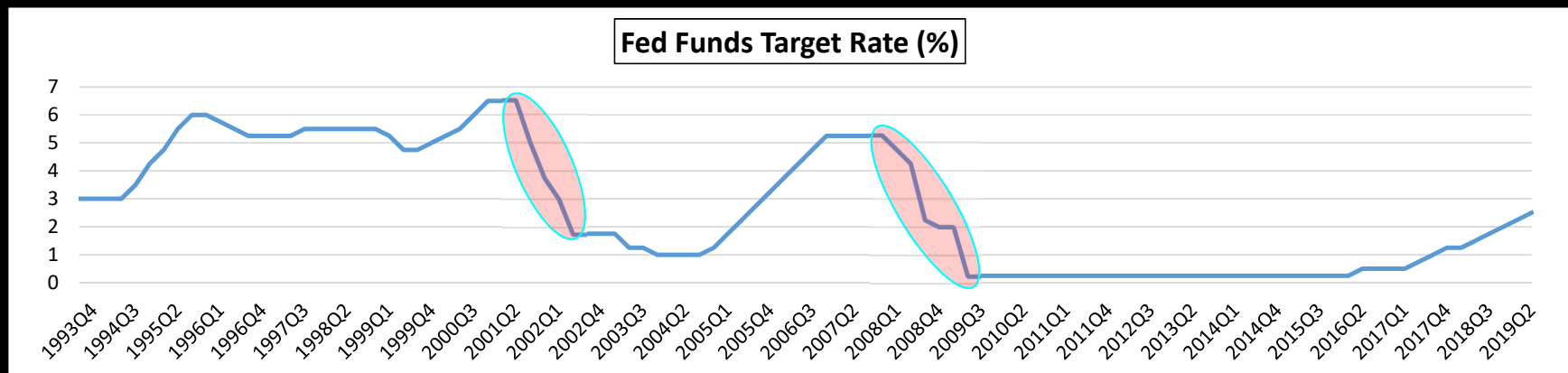
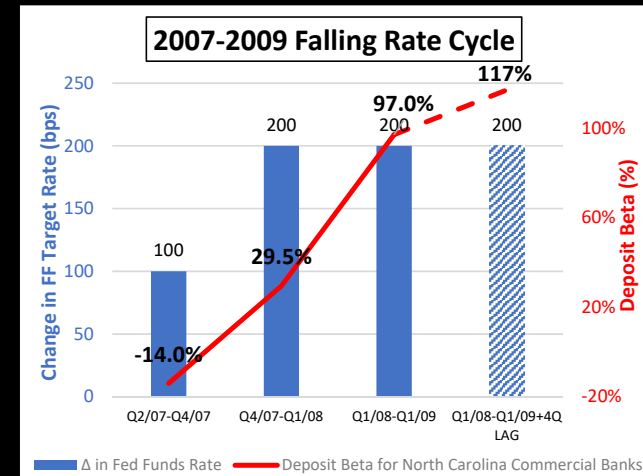
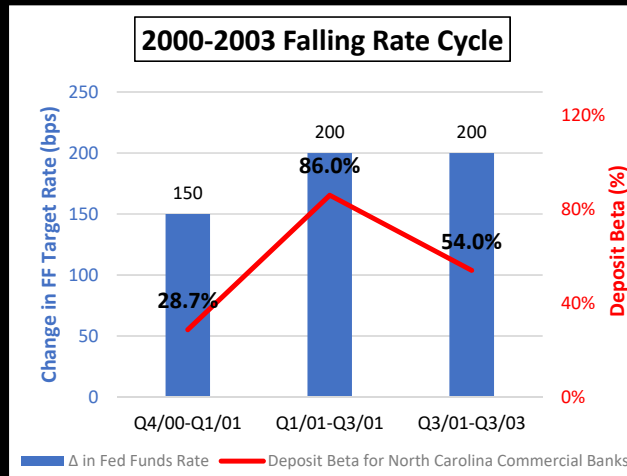
■ Reflection

- What did we do right?
- What did we do wrong?
- Were our strategies effective?
- How did environment change?

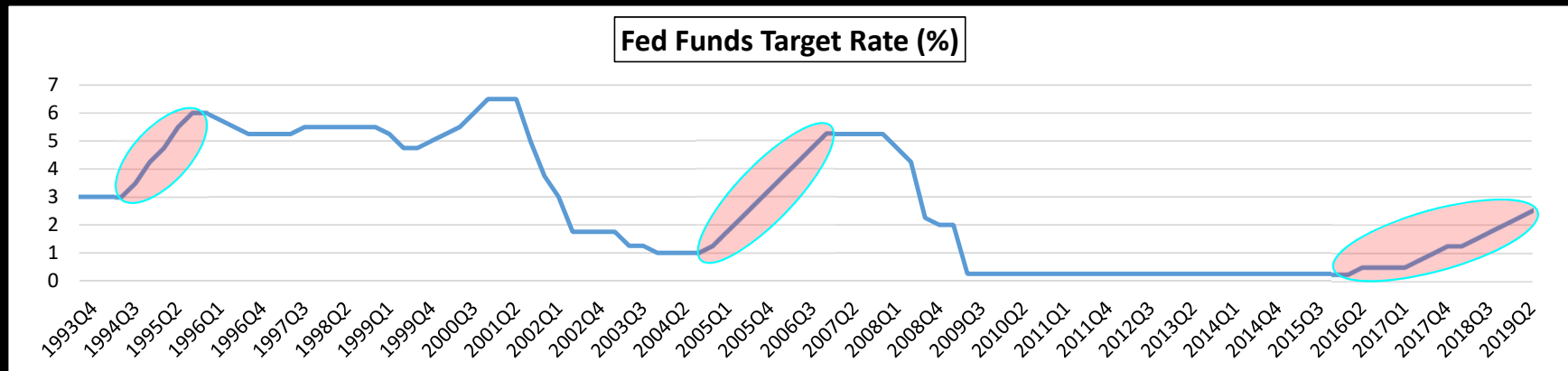
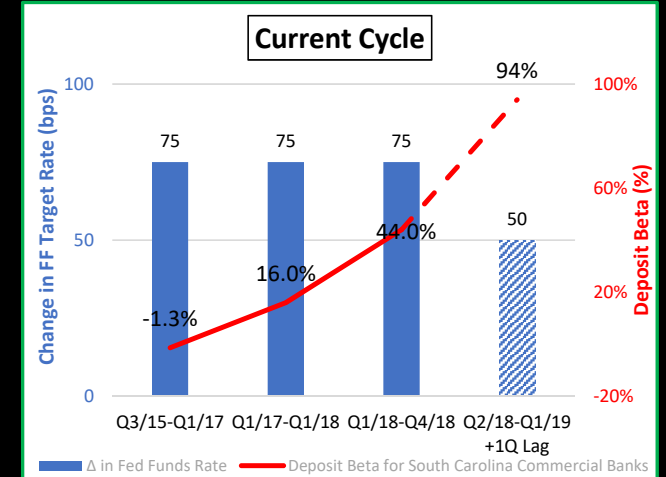
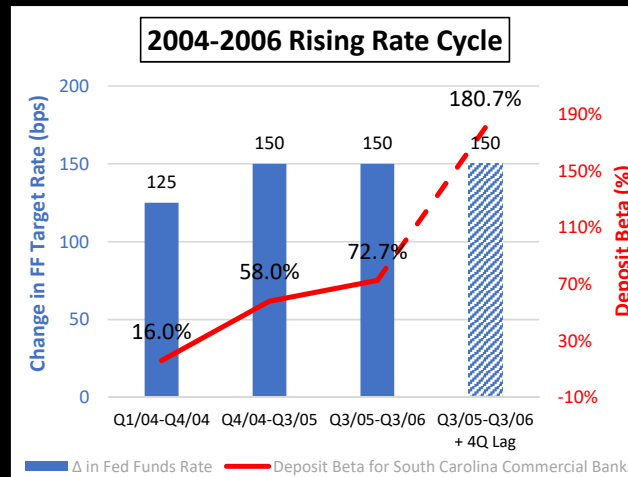
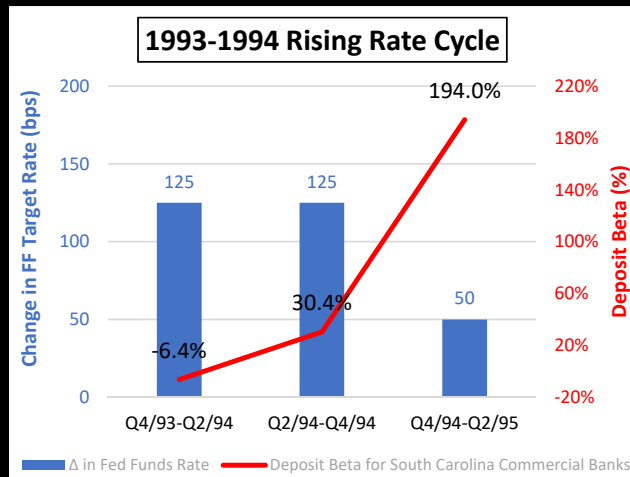
Correlation Between Fed Rate Increases & Deposit Betas



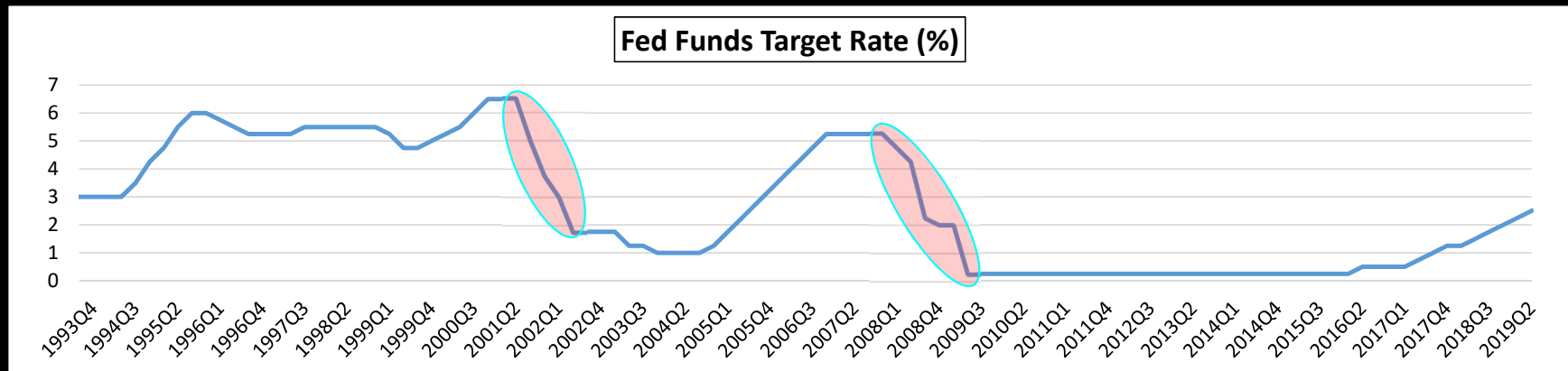
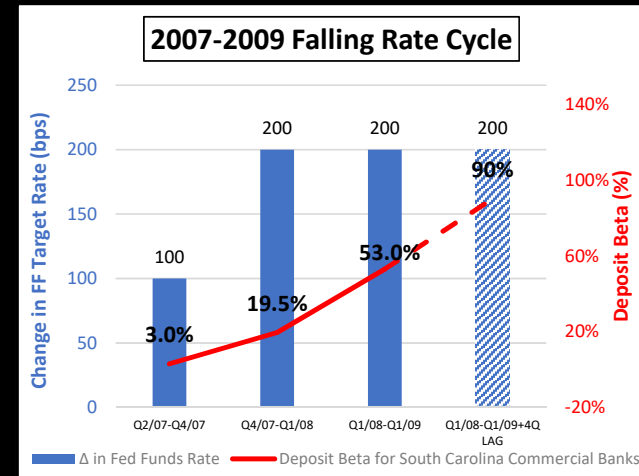
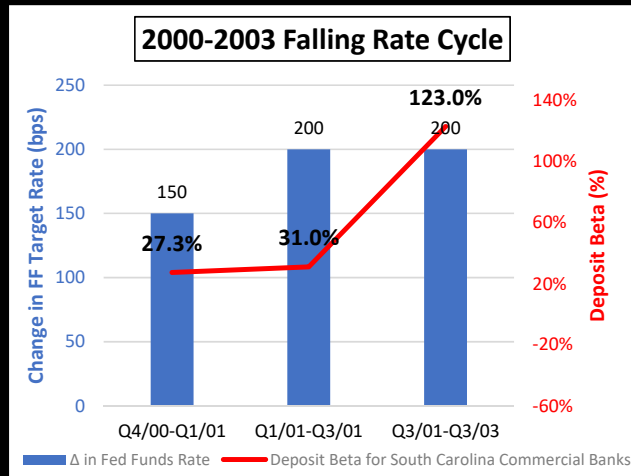
Correlation Between Fed Rate Increases & Deposit Betas



Correlation Between Fed Rate Increases & Deposit Betas

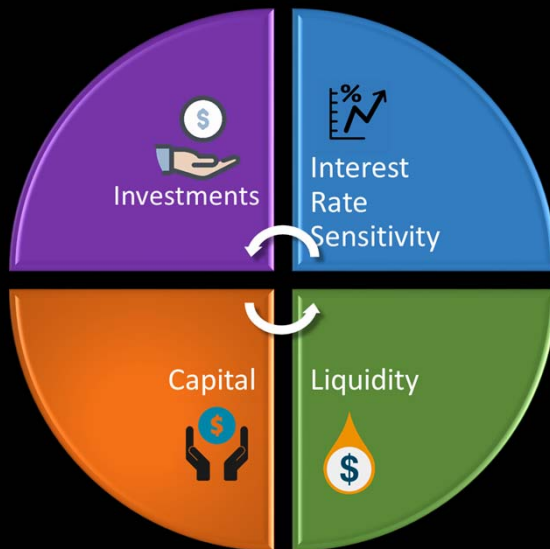


Correlation Between Fed Rate Increases & Deposit Betas



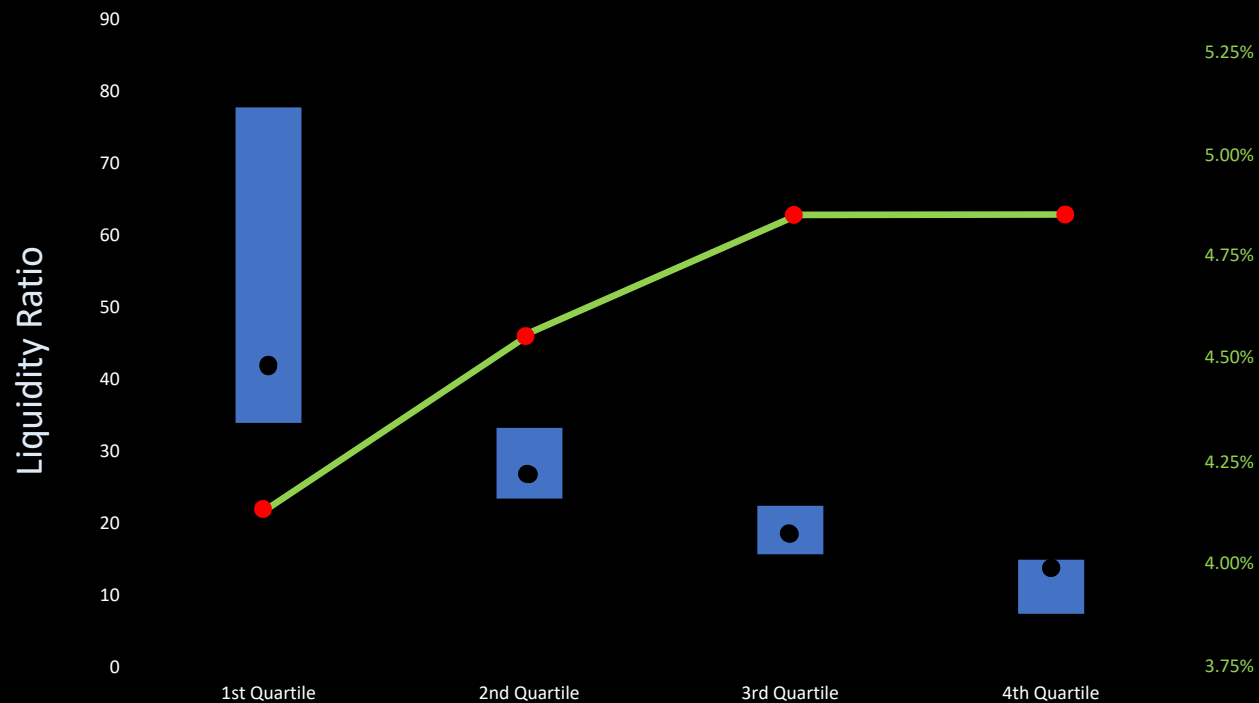
	Policy Guideline	Current Results 2Q2019	W/in Guideline (Y/N)	1Q2019	4Q2018	3Q2018	2Q2018
Interest Rate Risk							
Net Interest Income at Risk (1 Yr):	NII Max. Change						
Shocked up 400 bpts	-25%	6.60%	Y	3.95%	5.90%	2.63%	4.31%
Shocked up 300 bpts	-20%	5.60%	Y	3.75%	5.23%	2.78%	3.99%
Shocked up 200 bpts	-12%	4.51%	Y	3.04%	4.02%	2.68%	3.40%
Shocked up 100 bpts	-7%	2.83%		1.72%	2.16%	1.66%	2.10%
Shocked down 100 bpts	-7%	-4.12%		-2.71%	-2.93%	-3.52%	-4.27%
Shocked down 200 bpts	-12%	-10.68%	Y	-7.87%	-8.52%	-8.80%	-9.04%
Shocked down 300 bpts	-20%	-15.57%	Y	-11.34%	-12.14%	-11.45%	-10.92%
Shocked down 400 bpts	-25%	-17.69%	Y	-13.34%	-14.07%	-13.16%	-12.38%
Net Interest Income at Risk (2 Yr):	NII Max. Change						
Shocked up 400 bpts	-40%	11.73%	Y	13.09%	15.62%	12.47%	14.55%
Shocked up 300 bpts	-35%	10.23%	Y	11.69%	13.56%	11.12%	12.65%
Shocked up 200 bpts	-30%	8.33%	Y	8.95%	10.15%	9.07%	9.99%
Shocked up 100 bpts	-15%	5.26%		4.89%	5.41%	5.18%	5.70%
Shocked down 100 bpts	-15%	-7.94%		-6.68%	-6.25%	-8.35%	-9.12%
Shocked down 200 bpts	-30%	-19.86%	Y	-17.38%	-17.68%	-20.02%	-19.46%
Shocked down 300 bpts	-35%	-30.25%	Y	-25.72%	-26.15%	-25.64%	-23.23%
Shocked down 400 bpts	-40%	-34.14%	Y	-29.56%	-29.94%	-29.11%	-26.26%
Economic Value of Equity:	EVE Max. Change						
Shocked up 400 bpts	-35%	0.71%	Y	6.37%	8.95%	6.02%	8.17%
Shocked up 300 bpts	-30%	2.67%	Y	7.19%	9.23%	7.13%	8.93%
Shocked up 200 bpts	-25%	3.52%	Y	6.40%	7.87%	7.01%	8.21%
Shocked up 100 bpts	-15%	3.06%	Y	3.99%	4.73%	4.62%	5.26%
Shocked down 100 bpts	-15%	-5.29%	Y	-5.00%	-5.91%	-7.04%	-8.21%
Shocked down 200 bpts	-25%	-12.71%	Y	-11.71%	-13.53%	-15.95%	-19.07%
Shocked down 300 bpts	-30%	-20.42%	Y	-20.32%	-22.65%	-22.46%	-24.27%
Shocked down 400 bpts	-35%	-23.15%	Y	-21.83%	-23.99%	-23.46%	-25.13%

MONITOR THE PRESENT



- Where are we?
 - Position Assessment
 - Net Interest Margin Dissection
 - Competition Analysis
 - Word-Problem Approach
 - Re-focus on Objectives
- Reflect
 - Loan Demand vs. Deposit Growth
 - Rate Climate
 - Current Profitability (or not!)
 - Resources: Loan/Deposit Officers

MONITOR THE PRESENT



	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
High	77.77	33.24	22.42	14.93
Median	41.74	26.76	18.47	13.70
Low	33.94	23.42	15.68	7.40
Average Earning Asset Yield	4.10	4.53	4.82	4.82

MONITOR THE PRESENT





Margin Management: Earning Asset Yields - Mix, Selection, Pricing

Margin Depression

From the end of 1992 to the beginning of 2018, net interest margins in the Banking industry have declined about 100 basis points, with earning asset yields declining from 8.1% to 4.2%, and funding costs falling from 3.8% to 0.5%. This margin compression has been offset by either lower credit losses and/or lower net non-interest expense. So the question remains, where do margins go from here?

With funding costs either bottoming out last quarter for most institutions (or close to it) and the Federal Reserve telegraphing several increases in the Fed Funds...

[Read Full Article](#)

Frost Bank versus UBPR Peer Group*

	Metric	Frost Bank	UBPR Peer Group Average**	Percentile Rank
Net Interest Margin Dissection	Yield on Investments (FTE)	3.09	2.80	77%
	Yield on Total Loans	5.24	4.96	76%
	Earning Asset Yield (FTE)	4.12	4.45	25%
	Interest Expense to Avg. Earning Assets	0.46	0.86	12%
	Net Interest Margin (FTE)	3.66	3.61	53%
	Return on Average Assets	1.52	1.38	64%
	Net Interest Income Dependency Ratio	0.72	0.81	20%

Frost Bank versus Texas Banks

	Metric	Frost Bank	Texas Bank Average	Percentile Rank
Net Interest Margin Dissection	Yield on Investments (FTE)	3.09	2.58	84%
	Yield on Total Loans	5.24	5.87	16%
	Earning Asset Yield (FTE)	4.12	4.61	26%
	Interest Expense to Avg. Earning Assets	0.46	0.67	33%
	Net Interest Margin (FTE)	3.66	3.93	33%
	Return on Average Assets	1.52	1.14	80%
	Net Interest Income Dependency Ratio	0.72	0.86	9%

Earning Asset Mix and Balance Sheet Positions

Earning Asset Mix

Asset Size (\$000)	31,709,591	
Net Loans (\$000)	14,271,656	45%
Security Portfolio (\$000)	13,069,087	41%
Cash and FFS (\$000)	2,279,260	7%

Investment Portfolio

Municipals (% of Portfolio)	8,392,476	64%
MBS (% of Portfolio)	1,230,040	9%
CMO (% of Portfolio)	3	0%
Agencies (% of Portfolio)	0	0%
Other Securities (% of Portfolio)	3,446,568	26%

Performance Rankings



Liquidity and Funding

Pledged Securities (% of Portfolio)	26%
Liquidity Ratio	43%
FHLB Advances and Brokered CDs (\$000)	0
Cost of Funds (% of Average Liabilities)	0.36%

Capital

Tier 1 Capital	2,784,786
Tier-1 Leverage Ratio (%)	9.13
Total Risk Based Capital	2,921,636
Total Risk-Based Capital Ratio (%)	13.34
Municipals (% of Total RBC)	287%

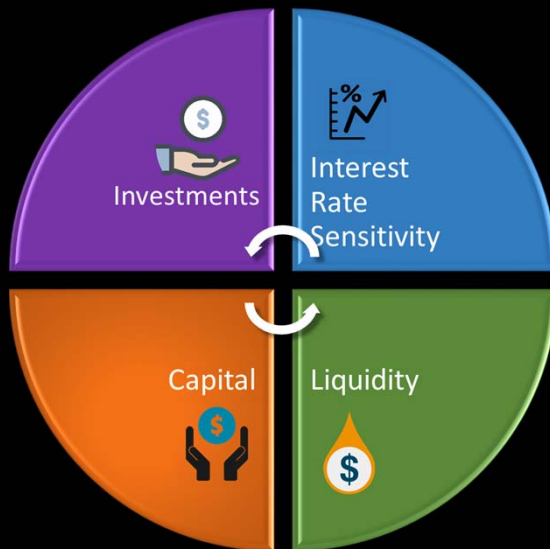
MONITOR THE PRESENT

How does your institution monitor its liquidity position?

- **On Balance Sheet Liquidity**
 - Cash & Fed Funds Sold
 - Unencumbered Securities
 - Pledging Needs
- **Off Balance Sheet Liquidity**
 - FHLB Borrowings
 - Brokered Deposits
 - National Market CDs
- **Total Liquidity**
 - Operational
 - Strategic
 - Contingency



PREPARE FOR THE FUTURE



- Where could we go?
 - Accountability
 - Review Minutes: Action Items, Strategies
 - Strategic Forecasting
 - Growth
 - New Markets
 - Tactical Forecasting
 - Loans vs. Deposit Projection
 - Liquidity Flows
 - Stress Testing
 - Capital: Credit Deterioration
 - Interest Rate Risk: Higher/Different Betas
 - Liquidity: Reduced Access to Funding
 - Securities: Cash Flow Volatility, Duration

STAR TRIBUNE
SACK

YOU DON'T
LOOK SO
HEALTHY.

WHAT KIND OF
CRACK IS THAT??



PREPARE FOR THE FUTURE – CAPITAL STRESS TEST

- **How would your bank react if...**
 - Loan concentrations in high risk sectors exceed guidelines
 - Asset quality deteriorates to historically stressful levels
 - Charge-offs increase
 - Retained earnings fall (or become negative!)
 - Dividends become restricted
 - Capital levels decline, leading to regulatory criticism

- **What tools do you have at your institution?**
 - Quantify and discuss capital adequacy
 - Credit Stress Testing
 - Comparison versus a historically stressful period (and higher)
 - Measuring the impact of credit loss on capital
 - Scenario Analysis – mild and major recession
 - Growth Stress Testing

PREPARE FOR THE FUTURE – LIQUIDITY STRESS TEST

- **How would your bank react if...**
 - FHLB Capacity was significantly reduced
 - Brokered CD lines were shut off
 - Deposit run-off exceeded historical norms
 - The bank became subject to deposit rate caps

- **What tools do you have at your institution?**
 - Quantify and monitor liquidity position
 - Contingency Funding Plan: How would you cure a shortfall?
 - Scenario Analysis
 - FHLB versus Brokered CDs
 - Early Warning Indicators
 - Prevent liquidity crisis before being subject to restrictions

PREPARE FOR THE FUTURE - INTEREST RATE RISK STRESS TEST

Stress Testing of Critical Assumptions

Net Interest Income Year 1

Scenario*	-400	-300	-200	-100	Level	+100	+200	+300	+400
Static Forecast	-4.2%	-4.2%	-4.2%	-2.8%		1.4%	4.8%	10.3%	16.6%
50% Prepay	-3.4%	-3.4%	-3.5%	-2.4%	0.0%	1.2%	4.4%	9.7%	15.8%
150% Prepay	-5.0%	-4.9%	-4.9%	-3.2%	0.0%	1.6%	5.2%	10.8%	17.3%
.8x Deposit Beta	-4.2%	-4.3%	-4.3%	-3.0%	0.0%	1.7%	5.3%	11.1%	17.6%
1.2x Deposit Beta	-4.2%	-4.2%	-4.2%	-2.7%	0.0%	1.1%	4.3%	9.6%	15.7%
ALCO Policy	-24%	-18%	-12%	-6%		-6%	-12%	-18%	-24%

Net Interest Income Year 2

Scenario	-400	-300	-200	-100	Level	+100	+200	+300	+400
Static Forecast	-8.6%	-8.6%	-8.5%	-5.7%		3.6%	9.4%	17.6%	26.7%
50% Prepay	-7.1%	-7.1%	-7.1%	-4.8%	0.0%	3.1%	8.6%	16.4%	25.1%
150% Prepay	-9.8%	-9.8%	-9.7%	-6.4%	0.0%	4.0%	10.1%	18.6%	28.0%
.8x Deposit Beta	-8.6%	-8.7%	-8.6%	-5.8%	0.0%	3.8%	9.8%	18.2%	27.5%
1.2x Deposit Beta	-8.6%	-8.6%	-8.4%	-5.5%	0.0%	3.4%	9.0%	17.0%	25.8%
ALCO Policy	-29%	-23%	-17%	-11%		-11%	-17%	-23%	-29%

Economic Value of Equity

Scenario	-400	-300	-200	-100	Level	+100	+200	+300	+400
Static Forecast	-23.4%	-23.3%	-10.9%	-2.6%		-1.5%	-3.6%	-5.5%	-7.0%
50% Prepay	-13.5%	-13.5%	-3.2%	0.3%	0.0%	-3.1%	-5.9%	-8.3%	-10.3%
150% Prepay	-28.0%	-28.0%	-15.2%	-4.5%	0.0%	-0.4%	-1.7%	-3.1%	-4.2%
.8x Deposit Beta	-22.8%	-22.9%	-10.7%	-2.8%	0.0%	-1.3%	-3.1%	-4.7%	-6.1%
1.2x Deposit Beta	-22.8%	-22.8%	-10.6%	-2.4%	0.0%	-1.8%	-4.0%	-6.1%	-7.8%
25% Decay Term	-7.9%	-7.9%	-3.3%	0.9%	0.0%	-4.0%	-8.2%	-12.0%	-15.2%
ALCO Policy	-35%	-30%	-25%	-15%		-15%	-25%	-30%	-35%

THE EVOLUTION OF ALCO

1970's	1980's	1990's	Pre-Crisis	Post-Crisis	Going Forward
1 st IRR Model Created 1977	1 st CMO Created 1983	S&L Banking Crisis 1986-1995	Dot-Com Bubble 1997-2000	Subprime Mortgage Crisis 2007-2009	
Economic Discussion	Economic Discussion	Economic Discussion	Economic Discussion	Economic Discussion	Economic Discussion
Rate Sensitive Assets to Rate Sensitive Liabilities (GAP Analysis)	Rate Sensitive Assets to Rate Sensitive Liabilities (GAP Analysis) Earnings at Risk	Rate Sensitive Assets to Rate Sensitive Liabilities (GAP Analysis) Earnings at Risk Interest Income Stress Testing Economic Value of Equity	Less Focus on GAP Analysis Earnings at Risk Interest Income Stress Testing Economic Value of Equity Industry Default Loan & Deposit Assumptions	Less Focus on GAP Analysis Earnings at Risk Interest Income Stress Testing Economic Value of Equity Bank Specific Loan & Deposit Assumptions	GAP Analysis Dropped Earnings at Risk Interest Income Stress Testing Economic Value of Equity Bank Specific Loan & Deposit Assumptions Stress Test Loan & Deposit Assumptions Surge Balances Credit Deterioration from Rising Interest Rates

Interest Rate Risk

Investments

Liquidity

Capital



BAD STRATEGIES



MISCONCEPTION – LIQUIDITY RISK

- Liquidity Ratio: 53%
- 10% of assets in Fed Funds Sold
- Projected 12 Month Investment Portfolio Cash Flow: 10% of assets
- FHLB Borrowing Capacity: Very High



Research Update:

United States of America Long-Term Rating Lowered To 'AA+' On Political Risks And Rising Debt Burden; Outlook Negative

Overview

- W
- S
- r

Texas Permanent School Fund; State Revolving Funds/Pools

Credit Profile

Texas Perm Sch Fd ICR

Long Term Rating

AAA/Stable

Affirmed

Rationale

Standard & Poor's Ratings Services has affirmed its 'AAA' rating on the Texas Permanent School Fund (PSF) guarantee program. The outlook is stable. Therefore, the 'AAA' rating remains available for all school district general obligation bonds guaranteed by the PSF. The rating is based on an analysis of the credit quality of the school districts issuing the

Sector	% of Port.	Mkt Value	G/L	Bk Px	Cpn	TEY	Mk Yld	G-Spr	OAS	Conv	Eff Dur	WAL	WAM	Lots
DTC CDs	3.2%	8,945	(75)	100.0	1.59	1.59	2.24	12	11	0.0	1.2	1.2	1.2	37
Short Agency Bullet	12.6%	35,866	(140)	100.0	1.35	1.33	1.98	6	0	0.0	0.6	0.6	0.6	12
1-3 Yr Agency Bullet	10.4%	29,425	(695)	100.4	1.64	1.52	2.41	6	6	0.0	2.5	2.6	2.6	10
4-6 Yr Agency Bullet	6.4%	18,251	(502)	99.9	1.82	1.85	2.56	7	6	0.1	3.9	4.1	4.1	7
1-3 Yr Callable Agency	25.9%	73,525	(1,795)	99.9	1.53	1.55	2.50	14	14	(0.1)	2.4	2.6	2.6	26
4-6 Yr Callable Agency	19.8%	56,121	(1,418)	99.9	2.14	2.15	2.77	26	21	(0.6)	3.5	4.4	4.6	18
15 Yr MBS (New)	5.6%	15,854	(715)	102.4	2.31	1.79	2.78	22	14	(0.1)	4.2	4.9	13.4	7
15 Yr MBS (Seasoned)	7.7%	21,966	(828)	102.2	2.51	1.84	2.96	52	42	(0.0)	3.2	3.5	9.6	11
30 Yr MBS (New)	1.7%	4,843	(330)	103.4	2.74	2.17	3.34	68	51	(0.5)	5.6	6.6	28.2	2
30 Yr MBS (Seasoned)	6.7%	18,880	333	101.6	4.08	3.84	3.13	58	45	(0.2)	4.1	4.8	21.1	56
Totals	100.0%	283,676	(6,165)	100.5	1.97	1.85	2.58	21	17	(0.2)	2.8	3.2	5.6	186

- Balance Sheet Risk Profile: Asset Sensitive
- Investment Portfolio amplifies asset sensitivity
 - Short duration
 - 45% in callable agencies
 - Little in call-protected assets
- The Bank is not monetizing its favorable funding mix – foregone income and capital

UBPR – Investment Yields



Bank A

Earnings and Profitability Yield on or Cost of: Total Investment Securities (TE)	<u>3/31/2019</u>			<u>3/31/2018</u>		
	BANK	PG 7	PCT	BANK	PG 7	PCT
	2.05	2.67	8	1.78	2.40	12

above/below peer

-62
bps

-54
bps

Bank B

Earnings and Profitability Yield on or Cost of: Total Investment Securities (TE)	<u>3/31/2019</u>			<u>3/31/2018</u>		
	BANK	PG 5	PCT	BANK	PG 5	PCT
	3.85	2.73	95	3.52	2.44	94

above/below peer

+112
bps

+108
bps

BAD STRATEGIES



GOOD STRATEGIES





Deposit Diaries: National Rate Caps and "Hidden" Liquidity Risk

8/21/18 | 4 MIN READ

At the beginning of the Fed's march to higher rates, depositors had become numb to near-zero rates on deposits. Memories of 5% 1yr CDs from 2007 faded along with the 1st iPhone. Since December 2015, Fed's initial target rate increase, the frequency of rate changes has gone from an annual adjustment to almost quarterly. Over the same period, delaying the need for additional funding, many community banks used investment portfolio cash flow to fund loans. With loan demand continuing, shrinking the investment portfolio is less of an option today as on-balance sheet liquidity approaches minimal acceptable regulatory levels. Now community banks are turning to deposit gathering as a way to manage wholesale funding levels and fund loans. And so it begins.....

[Read Full Article](#)



Investments | Asset / Liability | Risk Management

Deposit Diaries: FDIC Rate Caps Revisited

08/27/19 | 2 MIN READ

Back in the summer of 2018, we published ["FDIC Rate Caps and Hidden Liquidity Risk"](#) outlining the flaws of the FDIC's national rate calculation and the liquidity traps inherent in the interest rate cap restrictions. Since then, liquidity has become a key focus for regulatory examinations, specifically as it relates to Contingency Funding Plans and stress testing. At well capitalized institutions, examiners have been quick to identify funding concentrations in high-rate deposits and to question stress testing assumptions for high-rate deposit run-off and the feasibility of utilizing...

[Read Full Article](#)

BENCHMARKING DEPOSITS – NEW RATES

Term Fixed Rate	Federal Home Loan Bank	Brokered Deposits	FDIC National Average	FDIC Rate Cap	NC Bank Board Rate	NC Bank CD Special	Bank vs. FDIC Rate Cap	CD Specials vs. FDIC Rate Cap
1 MONTH	2.42	2.00	0.12	0.87	-	-	-	-
2 MONTH	2.42	2.00	0.17	0.92	-	-	-	-
3 MONTH	2.37	2.00	0.21	0.96	0.01	-	(0.95)	-
4 MONTH	2.35	2.00	0.27	1.02	-	-	-	-
5 MONTH	2.33	2.00	0.34	1.09	-	-	-	-
6 MONTH	2.32	2.00	0.40	1.15	0.01	-	(1.14)	-
1 YEAR	2.24	1.95	0.57	1.32	0.10	2.50	(1.22)	1.10
2 YEAR	2.23	2.10	0.76	1.51	0.20	2.75	(1.31)	1.15
3 YEAR	2.21	2.15	0.88	1.63	0.30	3.00	(1.33)	1.27
4 YEAR	2.24	2.18	0.97	1.72	0.50	-	(1.22)	-
5 YEAR	2.26	2.20	1.13	1.88	0.70	-	(1.18)	-
6 YEAR	2.44	-	-	-	-	-	-	-
7 YEAR	2.52	-	-	-	-	-	-	-
8 YEAR	2.66	-	-	-	-	-	-	-
9 YEAR	2.73	-	-	-	-	-	-	-
10 YEAR	2.79	-	-	-	-	-	-	-

LOAN PRICING CONSIDERATIONS

- Loan Pricing Strategies in an ultra-competitive environment
 - Disciplined approach to loan pricing
 - Risk-adjusted return considerations – is the bank getting compensated for the risk?
 - Capital allocation and concentration analysis
 - Entire-relationship profitability analysis and pricing
 - Loan structure and other features, i.e., rate index, prepayment penalty, etc.

BALLOON / RESET	AMORTIZATION	AVG LIFE	RATE
3	3	1.60	4.79%
3	10	2.65	4.66%
3	15	2.80	4.65%
3	20	2.85	4.64%
3	25	2.90	4.64%
3	30	2.95	4.63%
5	5	2.65	4.66%
5	10	3.95	4.60%
5	15	4.40	4.60%
5	20	4.60	4.60%
5	25	4.70	4.60%
5	30	4.80	4.60%
7	7	3.70	4.61%
7	10	4.85	4.60%
7	15	5.70	4.62%
7	20	6.15	4.63%
7	25	6.40	4.64%
7	30	6.55	4.65%
10	10	5.40	4.61%
10	15	7.25	4.67%
10	20	8.15	4.69%
10	25	8.70	4.71%
10	30	9.05	4.71%
15	15	8.30	4.69%
15	25	12.60	4.81%

Investment Yield Comparison

5yr Agency Bullet – 1.94%

5yr avg. life MBS – 2.69%

INVESTMENT ADVISORY - BEST PRACTICES TO INCREASE PERFORMANCE

- **Trade Execution**
- **Security Selection**
- **Investment Mix**
- **Investment Strategy**

INVESTMENT MIX ANALYSIS

3/31/2019

Institution	Tot. Assets	Cash & FFS	Tot. Securities	Securities/Assets	Cash & FFS/Assets	Inv. Yield (FTE)	US Tsy	Agency	MBSs	CMOs	Munis	Other
Institution 1	990,721	47,005	84,220	9%	5%	3.14	0%	0%	43%	7%	50%	0%
Institution 2	257,181	17,943	81,896	32%	7%	3.12	0%	0%	0%	0%	100%	0%
Institution 3	568,889	28,354	183,266	32%	5%	2.94	0%	1%	56%	0%	43%	0%
Institution 4	422,859	23,474	65,773	16%	6%	2.92	0%	0%	23%	0%	77%	0%
Institution 5	545,482	69,104	166,386	31%	13%	2.92	0%	0%	10%	1%	89%	0%
Institution 6	176,873	42,653	26,916	15%	24%	2.91	0%	16%	58%	0%	26%	0%
Institution 7	368,047	12,967	68,741	19%	4%	2.81	0%	0%	1%	0%	99%	0%
Institution 8	282,331	78,120	26,424	9%	28%	2.76	0%	0%	33%	62%	5%	0%
Institution 9	3,156,040	149,753	929,432	29%	5%	2.75	10%	1%	37%	14%	35%	4%
Institution 10	1,823,484	25,894	465,193	26%	1%	2.63	0%	0%	78%	2%	12%	8%
Institution 11	761,475	96,150	70,642	9%	13%	2.55	0%	0%	50%	40%	10%	1%
Institution 12	1,027,574	36,155	253,515	25%	4%	2.55	0%	32%	7%	0%	60%	0%
Institution 13	246,588	7,005	148,492	60%	3%	2.49	0%	1%	64%	11%	23%	0%
Institution 14	487,235	19,807	66,465	14%	4%	2.49	0%	0%	48%	0%	52%	0%
Institution 15	114,980	16,349	9,963	9%	14%	2.43	40%	12%	41%	0%	8%	0%
Institution 16	231,356	24,713	31,522	14%	11%	2.36	0%	8%	77%	0%	15%	0%
Institution 17	377,005	100,193	60,848	16%	27%	2.35	49%	0%	7%	9%	34%	0%
Institution 18	1,905,588	54,309	449,827	24%	3%	2.34	0%	18%	45%	20%	15%	2%
Institution 19	405,478	60,940	44,568	11%	15%	2.33	0%	59%	0%	20%	21%	0%
Institution 20	157,622	5,587	41,645	26%	4%	2.31	0%	36%	19%	10%	36%	0%
Institution 21	303,646	57,160	44,221	15%	19%	2.31	78%	20%	0%	0%	2%	0%
Institution 22	54,737	1,624	26,485	48%	3%	2.26	0%	26%	8%	55%	7%	4%
Institution 23	432,090	32,097	69,729	16%	7%	2.24	10%	0%	75%	0%	15%	0%
Institution 24	377,346	45,640	50,791	13%	12%	2.20	4%	39%	23%	0%	34%	0%
Institution 25	4,367,991	618,283	291,197	7%	14%	2.19	25%	68%	2%	0%	3%	1%
Institution 26	315,679	12,814	59,549	19%	4%	2.17	0%	0%	92%	0%	8%	0%
Institution 27	598,650	38,090	222,090	37%	6%	2.12	2%	50%	0%	0%	48%	0%
Institution 28	996,832	63,745	302,767	30%	6%	2.10	21%	61%	14%	0%	4%	0%
Institution 29	298,798	37,669	5,365	2%	13%	2.07	0%	0%	37%	33%	29%	0%
Institution 30	410,783	19,013	0	0%	5%	0.00	-	-	-	-	-	-

Taylor Advisors Case Study

THE BANK:

Forcht Bank (Lexington, KY) engaged Taylor Advisors to be its investment advisor in the 3rd quarter of 2007.



THE CHALLENGE:

Forcht Bank's investment yield was below peer and ranked in the 30th percentile per UBPR.

THE SOLUTION:

In the initial meeting, Taylor Advisors and the bank discussed the Investment Committee structure, reviewed highlights of a new proposed Investment Policy and strategy, and examined options for security execution.

TAYLOR ADVISORS EXPERTISE IN THE MUNICIPAL MARKET

- Third Party SEC Registered Investment Advisor who fulfills several business purpose requirements for the strategy
- Dedicated Staff that covers the market
- Dedicated Staff to independently Grade and Monitor Issuer Credit
- Purchasing Power and Strong Relationships with Municipal Underwriters to Negotiate favorable terms on behalf of our clients



AT A GLANCE:

- \$1.24 Billion - Assets as of 12/31/2018
- 30th Percentile – Investment yield rank among peers as of 9/30/2007
- 81st Percentile – Investment yield rank among peers as of 12/31/2018
- 3.06% - Investment yield (FTE) as of 12/31/2018

Frost Bank versus UBPR Peer Group*

	Metric	Frost Bank	UBPR Peer Group Average**	Percentile Rank
Net Interest Margin Dissection	Yield on Investments (FTE)	3.09	2.80	77%
	Yield on Total Loans	5.24	4.96	76%
	Earning Asset Yield (FTE)	4.12	4.45	25%
	Interest Expense to Avg. Earning Assets	0.46	0.86	12%
	Net Interest Margin (FTE)	3.66	3.61	53%
	Return on Average Assets	1.52	1.38	64%
	Net Interest Income Dependency Ratio	0.72	0.81	20%

Frost Bank versus Texas Banks

	Metric	Frost Bank	Texas Bank Average	Percentile Rank
Net Interest Margin Dissection	Yield on Investments (FTE)	3.09	2.58	84%
	Yield on Total Loans	5.24	5.87	16%
	Earning Asset Yield (FTE)	4.12	4.61	26%
	Interest Expense to Avg. Earning Assets	0.46	0.67	33%
	Net Interest Margin (FTE)	3.66	3.93	33%
	Return on Average Assets	1.52	1.14	80%
	Net Interest Income Dependency Ratio	0.72	0.86	9%

Earning Asset Mix and Balance Sheet Positions

Earning Asset Mix

Asset Size (\$000)	31,709,591	
Net Loans (\$000)	14,271,656	45%
Security Portfolio (\$000)	13,069,087	41%
Cash and FFS (\$000)	2,279,260	7%

Investment Portfolio

Municipals (% of Portfolio)	8,392,476	64%
MBS (% of Portfolio)	1,230,040	9%
CMO (% of Portfolio)	3	0%
Agencies (% of Portfolio)	0	0%
Other Securities (% of Portfolio)	3,446,568	26%

Performance Rankings



Liquidity and Funding

Pledged Securities (% of Portfolio)	26%
Liquidity Ratio	43%
FHLB Advances and Brokered CDs (\$000)	0
Cost of Funds (% of Average Liabilities)	0.36%

Capital

Tier 1 Capital	2,784,786
Tier-1 Leverage Ratio (%)	9.13
Total Risk Based Capital	2,921,636
Total Risk-Based Capital Ratio (%)	13.34
Municipals (% of Total RBC)	287%



UNIQUE STRATEGIES

	Bank 1	Bank 2	Bank 3
Tier 1 Leverage	7.00	16.00	7.00
Liquidity Ratio	4.00	37.00	37.00
Investments/Assets	10%	25%	50%
IRR Profile	Asset Sensitive	Asset Sensitive	Liability Sensitive

ASSESSING YOUR BANK'S ALCO PROCESS

- **How would you describe your ALCO process?**
 - Membership, Board, Frequency
- **How do you measure the effectiveness of ALCO?**
 - UBPR - Net Interest Margin, Peer Bank
- **How many basis points do you think you could improve or protect the margin from a more robust ALCO process?**

Earning Asset Size (in \$000)	Net Interest Income Change (\$000s) (due to NIM change in basis points)			
	5	10	25	50
300,000	150	300	750	1,500
600,000	300	600	1,500	3,000
900,000	450	900	2,250	4,500

ASSESSING YOUR BANK'S INVESTMENT PROCESS

- **How would you describe your investment process?**
 - Committee, Approach
- **How do you measure the performance of the portfolio?**
 - UBPR - Benchmark, peer bank
- **How many basis points do you think you could improve portfolio yield from a proactive investment strategy?**

Investment Portfolio Size (in \$000)	Investment Income Change (\$000s) (due to Yield change in basis points)			
	5	10	25	50
50,000	25	50	125	250
100,000	50	100	250	500
500,000	250	500	1,250	2,500

SNAPSHOT – SAMPLE BANK

Performance and Balance Sheet Snapshot

Frost Bank

111 West Houston Street San Antonio, TX 78205

Performance Rankings

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Earning Asset Mix and Balance Sheet Positions

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Agencies (% of Portfolio)	0	0%
Other Securities (% of Portfolio)	3,446,568	26%

Miscellaneous

Subchapter-S?	No
Effective Tax Rate (YTD)	11.29%
Efficiency Ratio	55.40

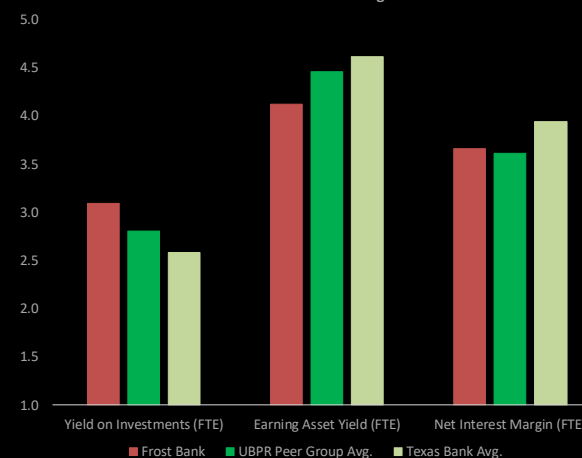
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Performance Rankings



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