Virtual Workshop – Series 1

LIBOR / SOFR Transition

Presentation by
Blue Rose Capital Advisors

January 21, 2021

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- Blue Rose is a full-service, independent Municipal Advisor firm with our headquarter offices located in Minneapolis (www.blueroseadvisors.com).

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Transition History

Why Replace LIBOR?

- LIBOR is the most widely utilized benchmark for short-term interest rates in the world.
- Approximately $200 trillion U.S. dollar denominated market share.

Uses

- Debt instruments
  - Corporate and municipal bonds
- Derivative instruments
  - Interest rate swaps
- Student loans
- Mortgages
- Credit cards

Shortcomings

- Based on bank's estimates
- Unsecured
- Illiquid underlying market
- Vulnerable to manipulation
- Difficult to compel banks to submit LIBOR estimates

Scandal

- Banks submitted misstated interbank rates as early as 1991
- Bankers received advanced information on LIBOR's movements from within their organization
- Banks colluded with each other to move rates
- Billions of dollars in fines have been paid by multiple institutions in relation to LIBOR "rigging"

Primary Financial Instruments with LIBOR Exposure

Loans / Bonds

- Taxable variable rate loans
- Tax-exempt variable rate direct purchase bonds
- Floating Rate Notes (FRNs)
- Lines of credit
- Lease agreements

Derivatives / Swaps

- Interest rate swaps
- Rate locks
- Swaptions
- Basis swaps
- Caps / Floors

Timeline

2014

- The Federal Reserve Bank of NY and the Federal Reserve Board formed the Alternative Reference Rates Committee (ARRC).

2017

- ARRC selected the Secured Overnight Financing Rate (SOFR), a rate based on fully collateralized overnight repo transactions.
- UK Financial Conduct Authority (FCA) announces LIBOR was not expected to last beyond YE 2021.

2020

- ARRC calls for new LIBOR-linked syndicated and bilateral loans to have refreshed “hardwired” fallback language.
- ISDA releases IBOR Fallbacks Protocol and Supplement.
- ICE Benchmark Administration (IBA) announces its expectation to consult on its intention to cease publication of 1-week and 2-month USD-LIBOR after December 31, 2021 and 1-, 3-, 6-, and 12-month USD-LIBOR after June 30, 2023.

What is SOFR?

ARRC selected the Secured Overnight Financing Rate (SOFR), a rate based on fully collateralized overnight repo transactions, to replace USD-LIBOR.

- Features:
  - Fully transaction based.
  - Has an underlying market more robust than LIBOR.
  - Based on collateralized loans.
  - Has exhibited a strong historical correlation to other money market rates.
- The Federal Reserve Bank (NY) began publishing SOFR on April 3, 2018.
  - For comparison purposes they've also published historical values back to August 2014.

Secured Overnight Financing Rate

- LIBOR to SOFR – Key Differences

LIBOR Features	SOFR Features
• Forward setting (i.e., rate set today) • Structured as a term rate (e.g., 1 month, 3 months) • Unsecured (panel bank risk) • Friendly for systems (take today's known rate and apply for interest period) • Friendly for borrowers (know your cash flows and your financial ratios)	• "In arrears" rate (rate known at end of interest period) • Overnight rate (need to compound or average over an interest period) • Risk-free, collateralized rate • Less friendly to systems (e.g., compounding, lookbacks, lockouts, payment delays) • Less friendly for borrowers (cash flows unknown and financial ratio compliance unclear up front)

Transition Economics

- For existing LIBOR products, a move to SOFR will require a series of adjustments.

"Term adjustment" converts a LIBOR rate by compounding or averaging a SOFR rate for a given period (e.g., 1M LIBOR vs. 30 day compounded SOFR).

"Spread adjustment" is an estimation of the historical difference (or spread) between an unsecured LIBOR rate and a "riskless" compounded or averaged SOFR rate.

LIBOR Transition for Loans

Loan Transition

- For **new contracts** recommended fallback language exists and has been published by the ARRC.
  - Reference to LIBOR in new loans is currently expected to stop December 31, 2021.
- **Existing contracts** have a wide variety of LIBOR fallback language depending upon vintage.
  - No fallback, inadequate fallback, amendment approach, or hardwired approach.
  - Dominant fallback may be daily simple SOFR + Spread (Fallback Rate).
- Although SOFR is currently expected as the LIBOR replacement index, it is not the only variable rate index that institutions may transition to.

Loan Adjustments / Mechanics

- Loans hedged with swaps present difficult cross-market issues:
  - Different SOFR/other index rate, different conventions (lookback, observation shift, payments), implication for floors.
  - Banks may have loan system issues with compounded SOFR in arrears; may be wrong rate given principal flows.
  - Potential implementation timing differences
  - Basis risk possible.
- It's not yet clear how ratios and credit spreads will be applied to compounded SOFR rates.
- Applying credit spreads and tax-exempt ratios before or after compounding SOFR rates, can lead to very different results.
  - **70%** of 1M LIBOR ≠ **70%** of (Term Adjusted) SOFR

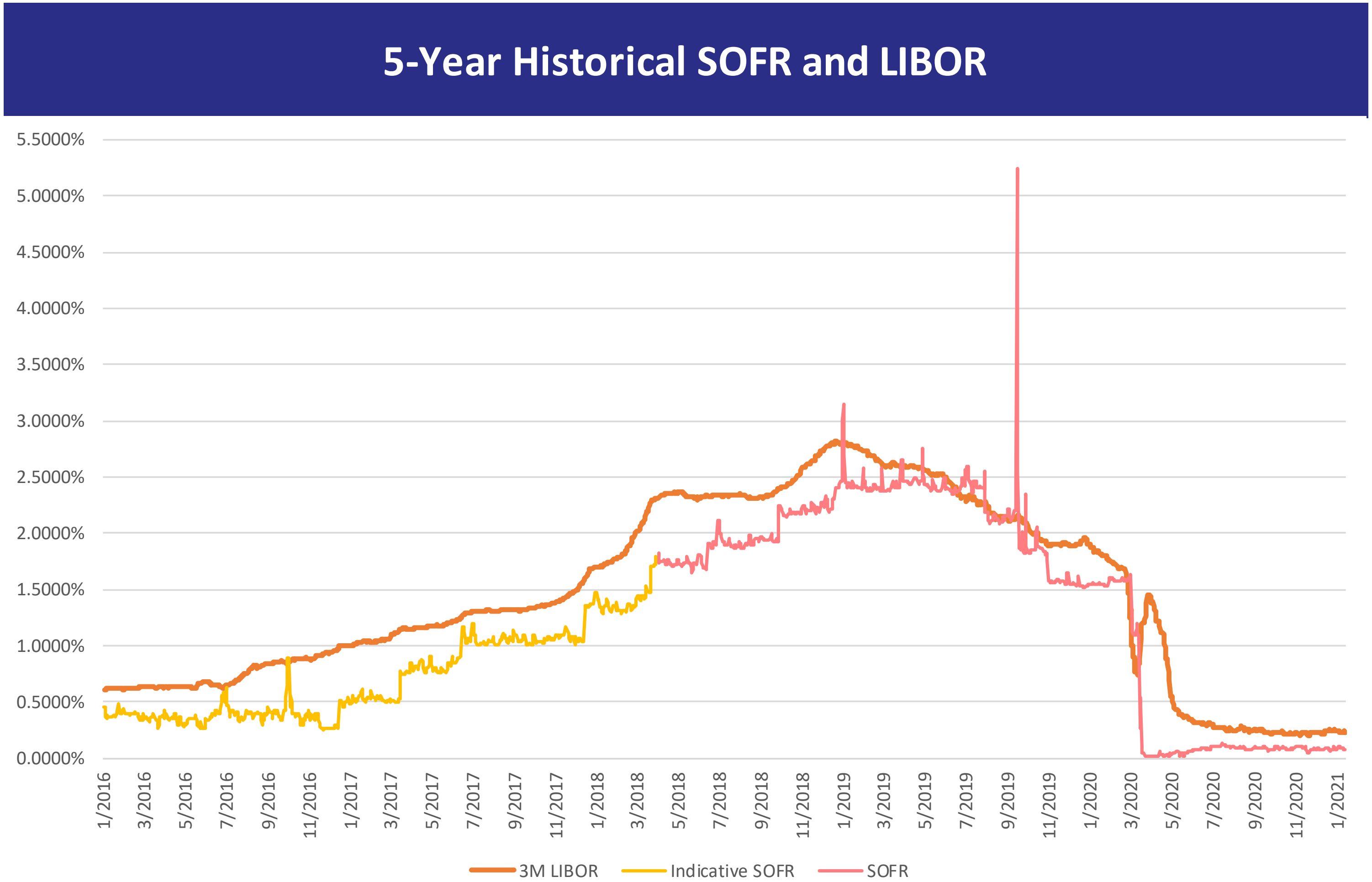
LIBOR Transition for Swaps

Swap Transition

- Exchange Traded Derivatives
    - Moved to SOFR collateralization and discounting in October 2020.
- OTC Derivatives
    - ISDA 2006 Definitions Supplement – deals with **new swaps** referencing LIBOR and same SOFR fallback.
    - ISDA 2020 IBOR Fallbacks Protocol – deals with **legacy swaps** and fallback to term adjusted SOFR + Spread Adjustment (Fallback Rate).
        - Bilateral amendments may be executed to preserve alignment with existing loans.

- Protocol and Supplement effective January 25, 2021.

LIBOR vs. SOFR Historically



**Source: Bloomberg*

SOFR Swap Curve

- Currently, the SOFR swap curve as anticipated by the ISDA Protocol is not in sync with the LIBOR swap curve.
  - As a result, value transfer risk exists
- The spread between curves is anticipated to converge as we move closer to LIBOR cessation.

Term	LIBOR	SOFR	Spread
5 yrs	0.523%	0.340%	0.183%
7 yrs	0.790%	0.590%	0.200%
10 yrs	1.086%	0.869%	0.217%
20 yrs	1.490%	1.253%	0.237%
30 yrs	1.574%	1.331%	0.243%

** Based upon market as of January 15, 2021.*

Transition Preparation

LIBOR Transition Do's & Don'ts

Do's

- Recognize that LIBOR will go away…eventually!
- Inventory your institution's LIBOR exposure.
- Understand that various market participants are impacted differently as a result of the LIBOR transition.
- Recognize there are different implications for financial instruments with a market valuation (derivatives) versus those without (variable rate loans / bonds).
- Rely on your financial and legal advisors to ensure proper transition occurs for your institution.

Don'ts

- Assume that LIBOR transition will occur at the same time for all financial instruments.
- Assume that SOFR, as a replacement index for LIBOR, even with a spread adjustment will make your institution whole as value transfer risk remains a legitimate concern.
- Assume that adopting "standard" LIBOR replacement language or ISDA fallback protocols is automatically the best approach.
- Assume the LIBOR transition process is solved, as many market and regulatory developments are expected during 2021.

Questions?

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WHEFA

Wisconsin Health and Educational Facilities Authority

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About the Blue Rose

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