



Transition from LIBOR to SOFR: A Primer for Members

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Because the transition from LIBOR to SOFR continues to evolve, information here may become stale at any given time. Last Updated June 6, 2019.

Background and Definitions

Why is LIBOR Going Away?



About **\$200 trillion** of derivatives, loans, securities, and mortgages are **LIBOR-based contracts...**

...priced off of **only \$500 million** daily trading volume... → •

This means LIBOR no longer reflects a robust, transactions-based market interest rate, **“posing a potential threat to the safety and soundness of financial institutions and to financial stability.”**

Source: ARRC, New York Fed; as of 2016

Who is Driving the Transition from LIBOR?



International Organization of Securities Commissions (IOSCO) published a new set of principles for financial benchmarks.



Financial Stability Board (FSB) published proposals for reform of existing benchmarks and development of alternative benchmarks.



Federal Reserve tasked the Alternative Reference Rate Committee (ARRC) with developing a rate to replace LIBOR.



Financial Conduct Authority indicated LIBOR production is not guaranteed beyond 2021.

ARRC selected SOFR to replace LIBOR by December 31, 2021.

Source: ARRC

Who is ARRC?

A group of market participants organized by the Federal Reserve and New York Fed to help ensure a successful transition from LIBOR to a more robust reference rate.

Comprised of various private-sector entities, such as banks, asset managers, insurers, and industry trade organizations, and official sector ex-officio members, including banking and financial sector regulators. It is also supported by 10 working groups, each tasked with specific objectives to assist in the transition.

Four Objectives of ARRC:

- Identify alternative reference rates and determine whether identified alternative rates are compliant with the IOSCO's *Principles for Financial Benchmarks*
- Identify best practices for contract robustness to ensure contracts are resilient to the possible cessation or material alteration of existing or new benchmarks
- Develop an adoption plan to outline the necessary steps that the official sector and market participants could take to make the adoption more successful
- Create a timeline and an implementation plan with metrics of success



<https://www.newyorkfed.org/arrc/about>

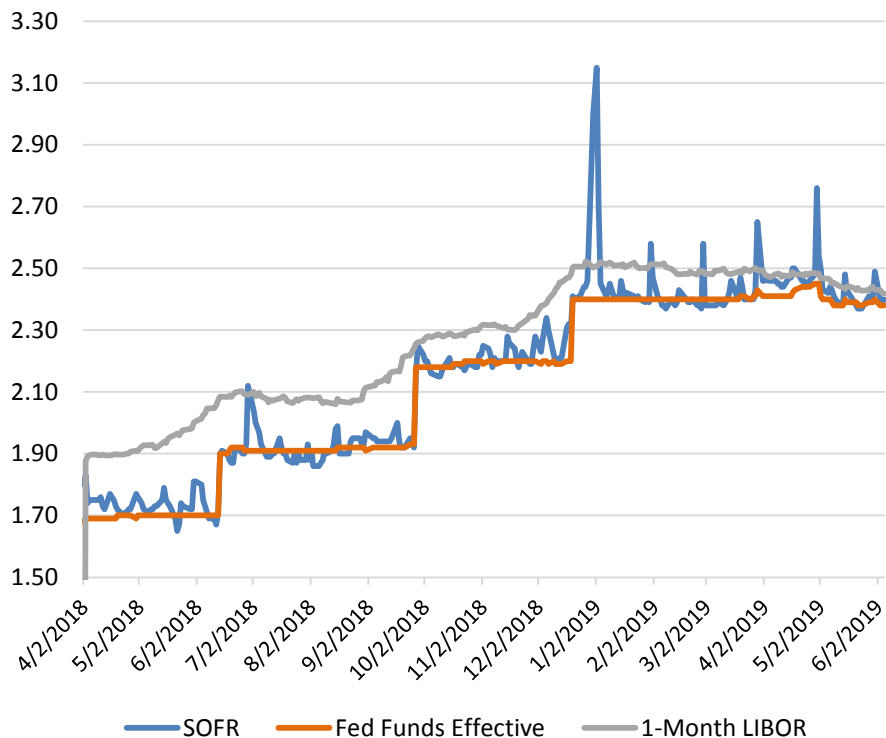
What is SOFR?

- The **Secured Overnight Financing Rate**.
- An **overnight, risk free*** reference rate based on actual transactions in the Treasury repo market (**secured borrowings** for financial institutions including securities dealers, banks, REITS, insurers, and GSEs).
 - For information on how SOFR is calculated, please visit: <https://apps.newyorkfed.org/markets/autorates/SOFR>.
- The **average daily volume** for these transactions has exceeded **\$750 billion** since August 2018.
- **Released on the following business day** at 8:00 a.m. by the New York Federal Reserve, which reflects the previous day's trading.

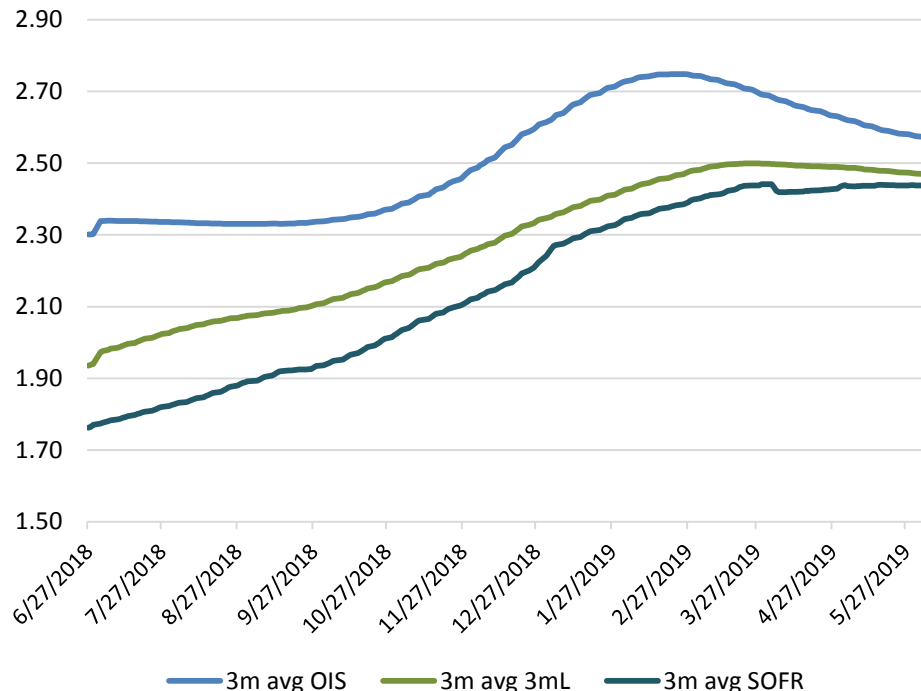
*secured by US Treasury securities; Source: New York Fed

SOFR Compared to Other Short-Term Rates

Short-Term Interest Rates Comparison



Short-Term Interest Rates 3-Month Rolling Averages



Source: Bloomberg; As of 6/5/2019

Since its introduction in April 2018, SOFR has closely tracked the Effective Fed Funds Rate. However, due to fluctuations in demand on month and quarter ends in the repo market, SOFR has been volatile at certain periods. Nonetheless, the volatility is generally smoothed out on a 3-month rolling basis, with respect to LIBOR.

A Side-by-Side Comparison

SOFR

- **Secured by U.S. Treasury securities**
- **Backward-looking rate**
- **Overnight (to begin)**
- **Based on actual transactions in repo market**
- **Over \$750B in daily transaction volume***
- **No credit risk element**

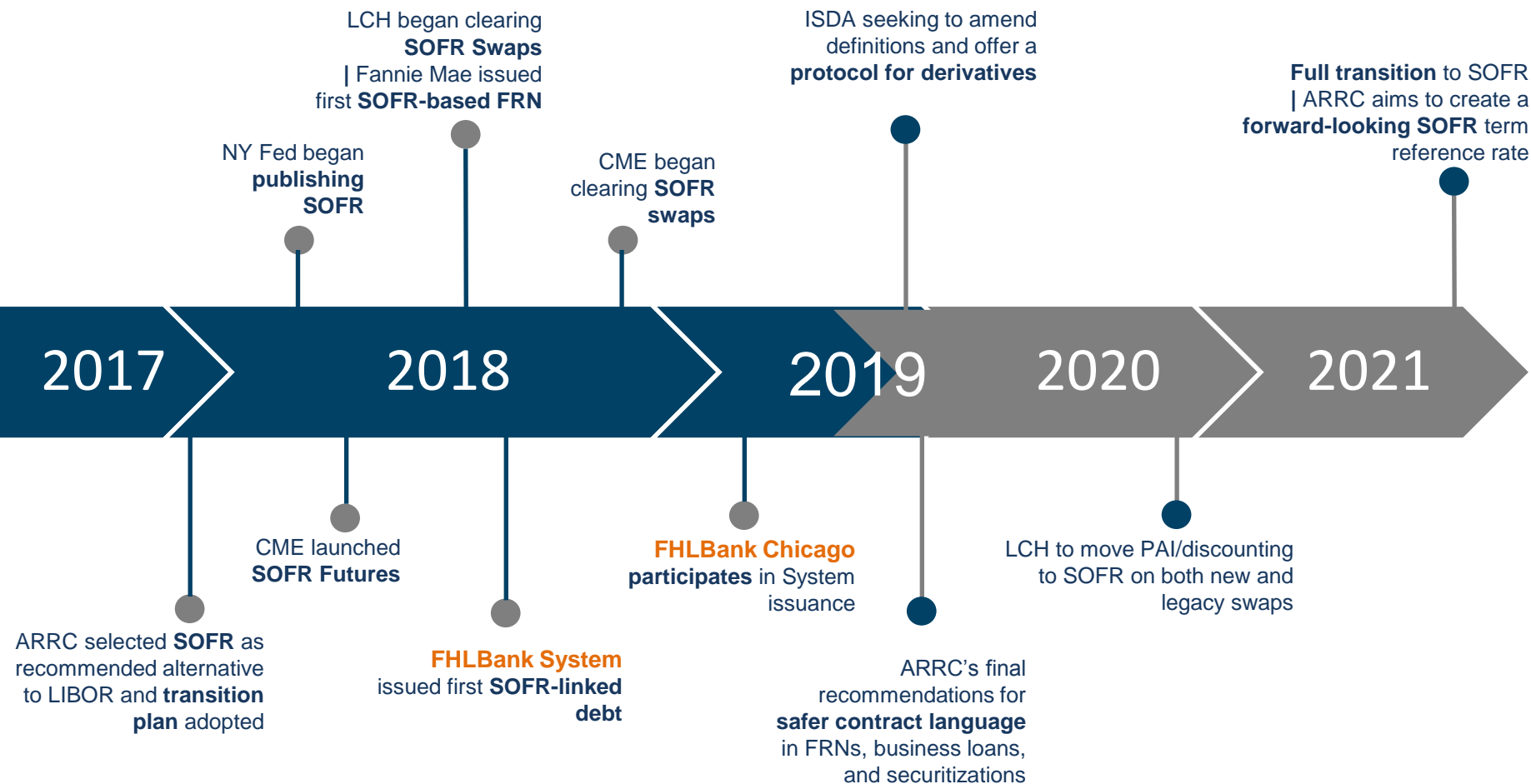
LIBOR

- **Unsecured**
- **Forward-looking rate**
- **Published for multiple terms (1-month, 3-month, 6-month)**
- **Based on actual and/or estimated rates**
- **\$500M or less in daily transaction volume***
- **Credit risk element**

*SOFR volume as of August 2018; Source: New York Fed

LIBOR volume as of December 2016; Source: ICE

Transition Timeline: SOFR, So Good



LCH = London Clearing House; FRN = Floating-Rate Note;
 ISDA = International Swaps and Derivatives Association
 CME = Chicago Mercantile Exchange

Source: ARRC, FHLBank Chicago

ARRC's Transition Strategy and Fallback Language

The ARRC's Work Scope: Three Segments

Derivatives

- Interest Rate Swaps
- Forward Rate Agreements
- Cross Currency Agreements

Cash Products

- Business Loans
- Floating Rate Notes
- Securitizations (MBS, CMBS, ABS)
- Mortgages / Consumer Products

Support

- Regulatory
- Legal
- Tax / Accounting
- Information Technology (IT)

Source: ARRC

Fallback language is a legal mechanism in contracts to provide a back-up plan. In other words...

if LIBOR ceased to exist tomorrow, to what interest rate would your contract “fall back” to?

Current Fallbacks Identified by ARRC

Derivatives

- Current contract language does not meet the FSB's standards for a situation in which LIBOR were permanently discontinued. ISDA definition currently directs counterparties to get quotes from London or New York reference banks in the case LIBOR is not available.

Business Loans

- Typical contract language for these loans may or may not address an end to LIBOR, depending on the contract. Similar to ISDA fallback language, but if quotes are not obtained, then use either the prime rate or a rate that is close to prime and add a fixed spread over EFR.

Floating Rate Notes

- Similar to business loans, but if quotes are not obtained, then the note is converted to a fixed-rate instrument at the last published value of LIBOR.

Securitizations

- Contract language varies among these products. They may use the last published LIBOR rate or allow the noteholder to name a successor rate.

Source: ARRC Second Report

Progress on Fallback Language

The ARRC has suggested that fallback language should be consistent across asset classes in order to reduce operational, legal, and basis risk.

The ARRC recommends market participants include more robust fallback language in new and amended contracts going forward. The ARRC has published numerous recommendations for addressing risks in cash product contract language. These consultations are open to public feedback, and a final recommendation will be published at a later date.

Final recommended language has been published for Floating Rate Notes, Syndicated Loans, Bilateral Business Loans, and Securitizations. The specific consultations on each asset class: <https://www.newyorkfed.org/arrc/fallbacks-contract-language>.

A summary of the ARRC's guiding principles for fallback language:

<https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-principles-July2018>

Source: ARRC

Progress on Fallback Language and Triggers

The ARRC's proposed provisions and language for fallbacks are tailored to each specific product but seek consistency in defining key terms, including:

1. **Trigger events** – events that start the transition from LIBOR to a new reference rate
2. **A successor rate “waterfall”** – a provision specifying the priority of unadjusted rates that would replace LIBOR
3. **A spread adjustment “waterfall”** – a provision specifying the priority of spread adjustments that would be applied to the successor rate because of differences between LIBOR and SOFR

The International Swaps and Derivatives Association (ISDA) is leading the development of new fallback language for derivatives. ISDA plans to amend the 2006 ISDA Definitions by the end of 2019 to implement fallbacks for LIBOR. The fallbacks will apply upon the permanent discontinuation of LIBOR based on pre-determined, objective triggers and will be to the relevant alternative risk-free rate (RFR), which is currently SOFR.

- Two consultations were released on May 16, 2019 by ISDA addressing benchmark fallbacks. View the consultations here: <https://www.isda.org/2019/05/16/isda-publishes-two-consultations-on-benchmark-fallbacks/>

Source: ARRC, ISDA

Permanent and Pre- Cessation Triggers

ISDA and ARRC have two overlapping triggers that would signal the conversion from LIBOR to a new reference rate, assuming a permanent cessation of LIBOR:

- A public statement by the benchmark administrator announcing it will cease to provide the rate permanently or indefinitely
- A public statement by the regulator or other authority stating that the administrator will cease to provide the rate permanently or indefinitely

Specific pre-cessation triggers have been defined by ARRC in its final consultations on each cash product.

ISDA also released two consultations on benchmark fallbacks on May 16, 2019. One addresses the permanent cessation of LIBOR and the other relates to pre-cessation triggers.

Source: ARRC, ISDA

Fallback Language: ARRC

ARRC released consultations showing investors' preference for the forward-looking term SOFR, plus a spread, as a replacement benchmark. Further, investors want a more detailed waterfall of events for both rate and spread adjustment for each cash product.

Bilateral Business Loans: The ARRC is recommending three sets of fallback language for new bilateral business loans: hardwired approach, amendment approach, and hedged loan approach. View the final consultation here: https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/Bilateral_Business_Loans_Fallback.pdf

Floating Rate Notes: The ARRC has proposed one specific approach for fallback language for these contracts. It involves defining the events that would start the transition from LIBOR, outlining a clear waterfall for determining which rate would replace LIBOR, and deciding how a spread adjustment to that rate would be calculated. View the final consultation here: https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/FRN_Fallback_Language.pdf

Securitizations: The ARRC has proposed one approach to new fallback language. It proposes a hardwired approach regarding trigger events and fallback rates with spread adjustments. It also addresses the unique challenges presented by the securitization market's asset and liability components. View the final consultation here: https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/Securitization_Fallback_Language.pdf

Syndicated Loans: The ARRC has recommended two options for fallback language of new syndicated loans: hardwired approach and amendment approach. The fallback provisions use clear and observable triggers and successor rates with spread adjustments, subject to some flexibility to fall back to an amendment. View the final consultation here: https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/Syndicated_Loan_Fallback_Language.pdf

Source: ARRC

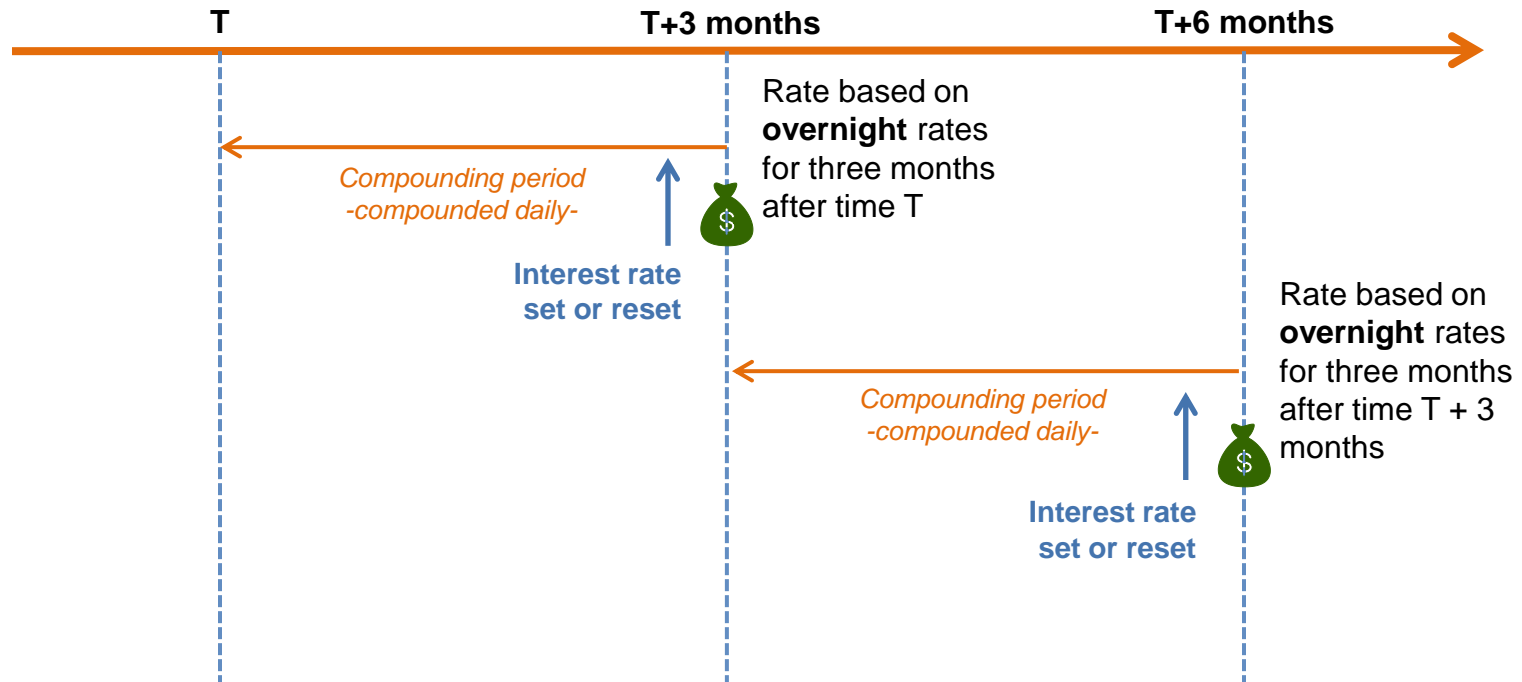
Fallback Language: ISDA

Consultations released by ISDA in December 2018 and May 2019 have preliminarily selected the “compounded in arrears” approach to calculate term adjustments to the relevant risk-free rate and the “historical mean/median” approach for the spread calculation. Final results are expected to be released this year.

Alternatives: Term Adjustments	Alternatives: Spread Methodologies
<p>Spot Overnight Rate – Risk-free Rate (RFR) as of one or two business days prior to the beginning of the LIBOR leg</p>	<p>Forward Approach – market forward spread between the relevant LIBOR and RFR in the relevant tenor at the time of trigger</p>
<p>Convexity-Adjusted Overnight Rate – similar to spot overnight rate but modified for daily compounding over the LIBOR term</p>	<p>Historical Mean/Median Approach – historical mean or median spread between the relevant LIBOR and RFR calculated over a significant, static lookback period</p>
<p>Compounded Setting in Arrears – RFR observed over the relevant LIBOR tenor and compounded daily during that period</p>	<p>Spot-Spread Approach – spot spread between relevant LIBOR and RFR on the day preceding the trigger event</p>
<p>Compounded Setting in Advance – RFR observed over relevant LIBOR tenor and compounded daily over previous LIBOR period</p>	

Source: ISDA

Defined: Compounded Setting in Arrears



Compounding Period: This reflects an *averaged overnight rate over the relevant time period* (in this case three months). The interest rate would be set a few days in advance of the payment due date near the end of the period. **The compounding period is *prior* to the interest rate set or reset.** Compound interest means the amount of interest owed each day is accumulated and paid later.



Source: ISDA

Member Action: Fallback Language

Members should review and understand fallback language in existing loans and investments.

- By reviewing existing language in legacy contracts, determine trigger events, potential substitute indices, and calculation of interest rate and spread.
- It is important to determine if current language will ensure a smooth transition or if amendments or renegotiation is needed.

Members should also begin to create language for new LIBOR transactions that ensures fallback language is robust enough to ensure a smooth transition to a new reference rate.

- This may require multiple iterations as transition language continues to evolve.

Checklist: Where Could LIBOR be Lurking?

Derivatives

Members should review ISDA fallback language to identify, in advance, contracts that may need fallback language implemented or amended.

Cash Products

Members should review ARRC fallback language to identify, in advance, contracts that may need fallback language implemented or amended.

Operational Support Processes

Members should assess accounting, tax, and IT system implications and work to understand all areas of the organization that could be affected by the transition.

Collateral Pledged to FHLBank Chicago

Collateral Pledged to the Fed and Other Counterparties

FHLBank Chicago Advances

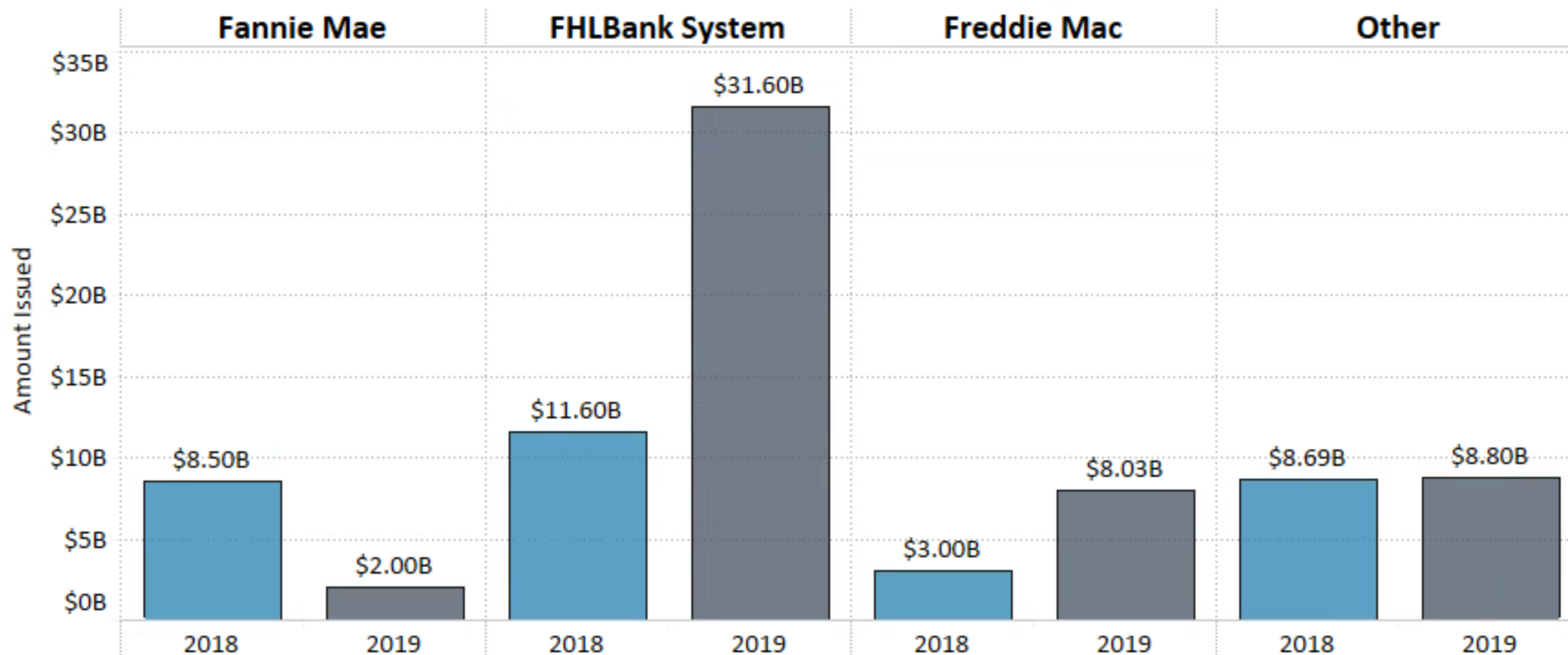
The FHLBank Chicago is still offering LIBOR-indexed advances across all available terms. Updated fallback language is in the Member Product Guide, which is incorporated into all new Advance Applications to reflect the Bank's sole reasonable discretion to select a comparable replacement rate once a determination has been made.

The FHLBank Chicago Will Continue To Monitor SOFR

- The FHLBank Chicago is continually monitoring the SOFR market for liquidity and derivative transactions.
- The FHLBank Chicago now offers a floating-rate advance linked to SOFR. The Adjustable Advance (A300) rate is equal to SOFR plus a fixed spread. You can find current Adjustable Advance rates on the FHLBank Chicago rate sheet under the “Floating Rate Advances” section.
- The FHLBank Chicago has updated fallback language in the Member Product Guide, which is incorporated into all new Advance Applications to reflect the Bank’s sole and reasonable discretion to select a comparable replacement rate once a determination has been made.
- **Communication is key!** We will keep our members up to date on changes. Our members should also work with their customers and counterparties so they are informed as well.

How Have the Markets Developed?

SOFR Debt Issuance



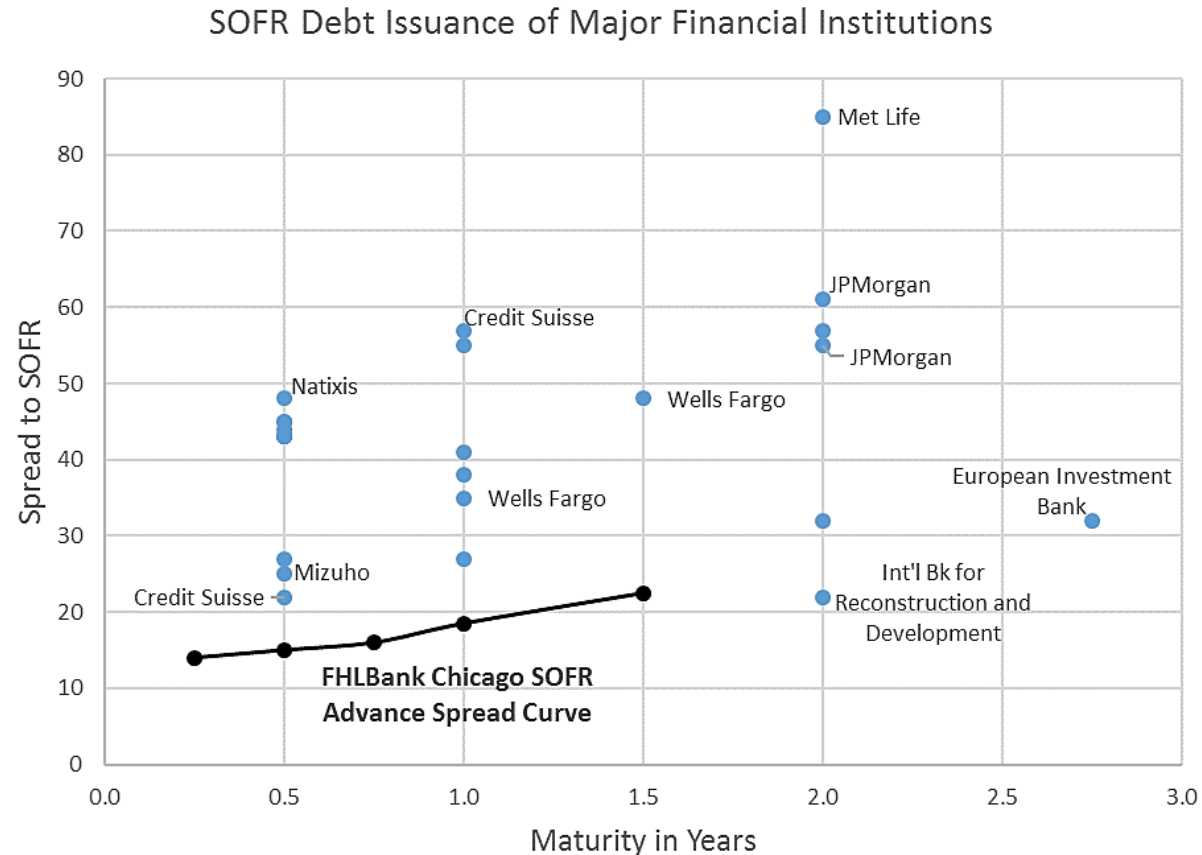
As the world's largest issuer of LIBOR-linked notes, the FHLBank System recognizes it is critical that a robust market for SOFR debt be developed in order for the transition from LIBOR to SOFR to be successful for financial markets and our members.

As a result, the Home Loan Bank System has been the lead issuer of SOFR-linked debt in an effort to develop and lead the market. The System has issued over \$43B in SOFR floating-rate notes from November 2018 through April 10, 2019.

Source: FHLBank Chicago, Bloomberg

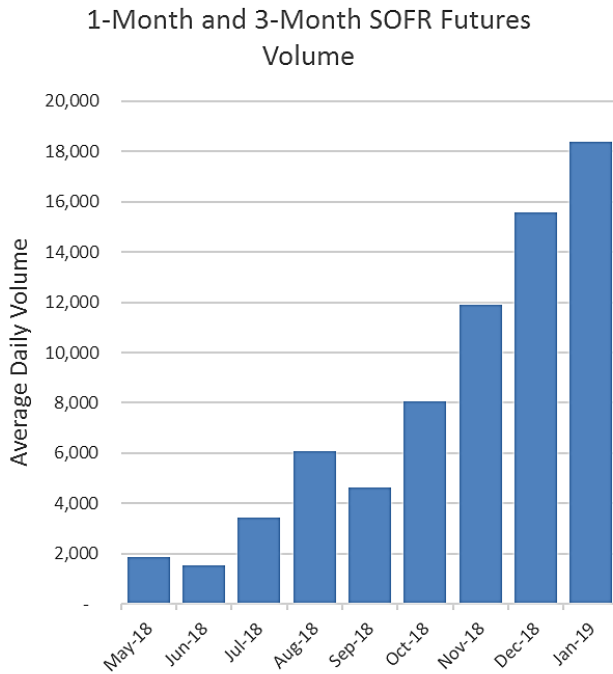
FHLBank SOFR Issuance vs. Other Financials

- The FHLBank System has been able to issue SOFR-linked debt in the market at very favorable levels compared to other participants.
- By passing on the FHLBank's funding advantage to our members, you are able to take out SOFR-linked Adjustable Advances at spreads much lower than where major global financial institutions can issue SOFR-linked debt.

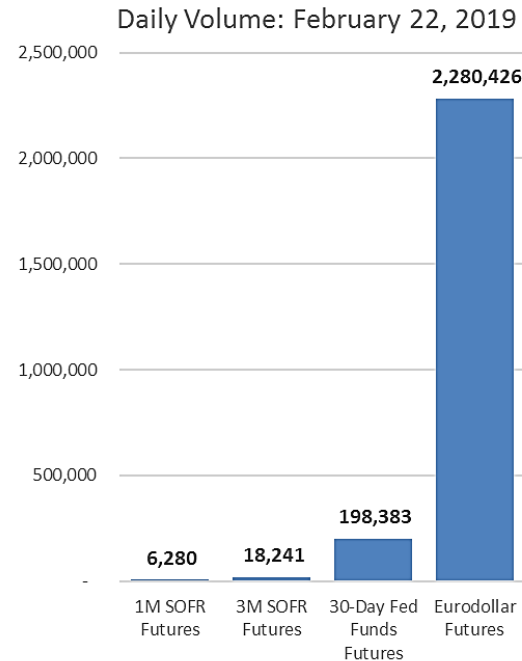


Source: FHLBank Chicago, Bloomberg

SOFR Futures and Volumes



The SOFR futures volume has been growing steadily since its introduction in May 2018...



...however, volume still remains minimal relative to other interest rate futures products

Source: FHLBank Chicago, Bloomberg, CME Group

- Currently, the FHLBank Chicago only offers daily-reset SOFR advances and will may offer 1-month and 3-month resets once the market develops for such products.
- We are not offering options at this time as **there is currently no market for options such as SOFR caps or floors**. We are monitoring the SOFR-linked derivatives market as liquidity deepens and more products are added.

Source: FHLBank Chicago, Bloomberg

Term SOFR

Transition Plan

- The final step in the ARRC's Paced Transition plan is the creation of a term SOFR.
- Creating a term SOFR is critical to the ARRC's transition plan as it is at the top of the fallback waterfall for cash products (plus a spread).

ARRC Developments

- The ARRC is currently tackling how to build a forward-looking SOFR term rate as part of its transition plan and aims to publish indicative rates using derivatives.
- The process requires launching and trading new SOFR products – specifically futures and swaps – to build liquid markets.

Market Developments

- The futures market is being used by firms to build a SOFR curve up to two years; after that point the Overnight Index Swap (OIS) curve is used.
- Over time, this curve will be built up over the two year mark as institutions issue SOFR-linked floating-rate notes greater than two years.

Source: ARRC



Questions?

Email membership@fhlbc.com