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Leaving LIBOR: A Landmark Transition

J.P. Morgan nurtures a new benchmark, SOFR, and breaks down what it means for nearly \$200 trillion of assets.

J.P.Morgan

A new benchmark reference rate, the Secured Overnight Financing Rate (SOFR), is positioned to transform USD-based financial markets, heralding a transition from the London Interbank Offered Rate (LIBOR).

The size, scale and scope of LIBOR usage make this shift arguably the biggest challenge facing the finance industry today. Embedded in the plumbing of markets over more than three decades, the reference rate evolved into an international standard rooted in everything from consumer contracts such as auto loans to \$190 trillion of interest rate derivatives.

But in the wake of post-crisis reforms that have altered market structure, the U.K. regulator tasked with overseeing the benchmark - the Financial Conduct Authority (FCA) - said what LIBOR seeks to measure is no longer sufficiently active and that it would not compel banks to submit it beyond 2021.



The LIBOR rate itself has become less and less robust. It is therefore essential to provide an alternative because there are significant financial stability risks in the marketplace for all participants if LIBOR ceases to exist and there is no clear way forward.

Sandie O'Connor

ARRC Chair and JPMorgan Chase Chief
Regulatory Affairs Officer

“I hope it is already clear that the discontinuation of LIBOR should not be considered a remote probability ‘black swan’ event,” Andrew Bailey, chief executive of the FCA, said in a speech earlier this year.

Now asset managers, lenders, investors, corporations and other stakeholders must get ready for what the press dubbed “the world’s most important number” to disappear. To proactively address the issue, the finance industry is collaborating across the private and official sectors to implement a replacement for USD LIBOR called SOFR.

J.P. Morgan is providing leadership in this landmark transition, chairing

the Alternative Reference Rates Committee (ARRC), a group of industry participants convened by the Federal Reserve Board, and mobilizing hundreds of staff across the globe to prepare internally and externally for the ramifications.

Below, J.P. Morgan speaks with experts from its regulatory affairs, sales, trading and research departments to explore the issue and educate all stakeholders on the new reference rate set to replace the historic benchmark.

What is LIBOR and why doesn't it work? From 1969 to 2021

Born on August 15, 1969 with a J.P. Morgan transaction

Born in 1969, LIBOR came on the scene when Greek banker Minos Zombanakis, a managing director at J.P. Morgan legacy bank Manufacturers Hanover Ltd. in London, brokered a syndicated loan of \$80 million.

Ten months after the first deal – on June 5, 1970 – Manufacturers announced a second 5-year loan of \$100 million bearing a fluctuating interest “based on the six-month interbank rate in London.” These are the first records of LIBOR.



LIBOR wasn't intended to become a benchmark for the entire market. It started out because a group of banks wanted to lend money to overseas clients back in the 60s and no one had ever done a floating rate loan before.

Josh Younger

Interest Rate Derivatives Research,
J.P. Morgan



You need to look at the exponential growth of the swaps market to understand why LIBOR became so embedded in the derivatives space. In the late 1990s, USD swaps totaled \$15 trillion before jumping to well above \$100 trillion in the late-2000s.

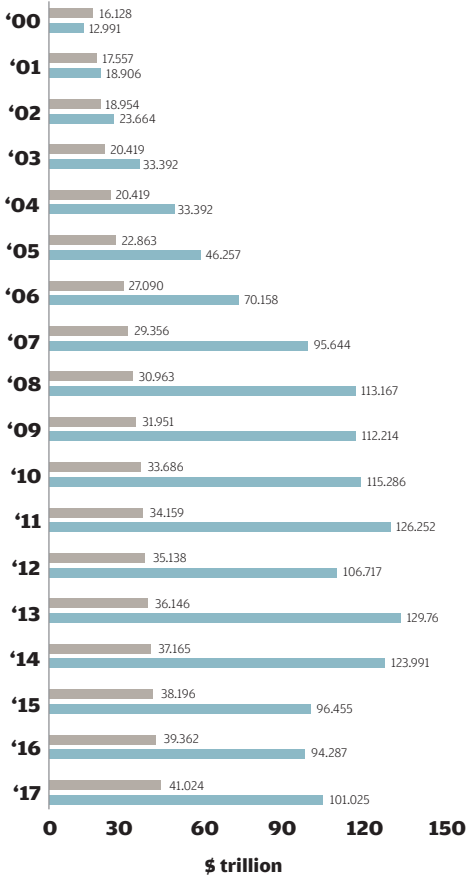
Adam Walker

Rates Sales & Marketing,
J.P. Morgan

The reference rate worked its way organically into deals, pushing the British Bankers Association to officially embrace it in 1986 and establish a governance system that involved asking traders across a host of panel banks to estimate each day at which level they believed they could borrow funds.

LIBOR, a measure of the interest rate banks were willing to pay one another to raise cash, then became the standard benchmark in derivatives markets, which ballooned in the 2000s. This tied LIBOR to transactions with notional amounts in the trillions of dollars.

The notional value of interest rate swaps outstanding dwarfs all outstanding fixed-income securities



USD swaps market grew by more than

10x

in the 2000s

■ Total USD Fixed Income Securities
 ■ USD Swaps

Source: J.P. Morgan, BIS, SIFMA

No Longer Fit For Purpose: The 2008 Financial Crisis

2008 would change everything for the benchmark built into the financial system over three decades. When Lehman Brothers failed, banks and regulators recognized the risks associated with the unsecured borrowing and lending transactions that support LIBOR submissions.

Coupled with new post-crisis requirements on bank capital – such as total loss-absorbing capacity rules mandating the world’s largest banks to hold larger buffers of debt or other securities to cushion losses – banks altered how they fund themselves.

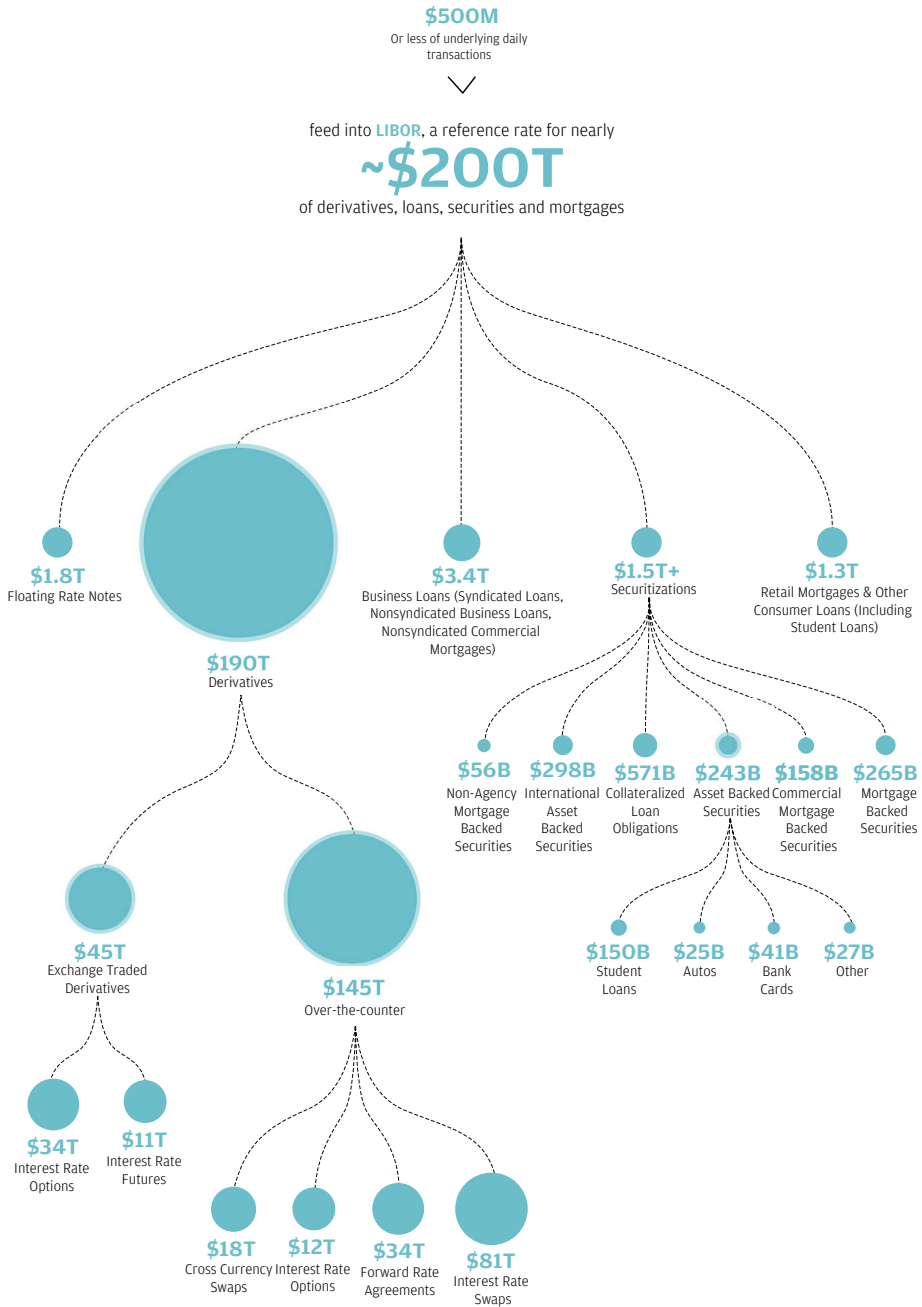


The key challenge with **LIBOR** arises from the fact that unsecured borrowing transactions between banks have declined since 2008, reducing the size of the underlying market feeding into **LIBOR** submissions. **SOFR**, with its large range of observable transactions, will be a more robust, measurable and reliable benchmark.

Thomas Pluta

Co-Head of Global Rates Trading,
J.P. Morgan

The problem with LIBOR



SOFR volumes reliably remain between
\$700-\$800B
on a daily basis

Source: J.P. Morgan, Federal Reserve Board, BIS, Bloomberg, CME, DTCC, JPMorgan Chase and ARRC

*Derivatives, floating rate notes, business loans, retail mortgages & other consumer loans data are gross notional exposures as of year-end 2016

*The figures for syndicated and corporate business loans do not include undrawn lines of credit

*Securitizations data exposures as of September 2018

Following the first major settlements concerning banks' LIBOR submissions in 2012, regulators and policymakers undertook a review of financial benchmarks that ultimately led to increased oversight and governance.

During this process they recognized that the decline in wholesale unsecured term money market funding by banks threatened the steadfastness of LIBOR: \$190 trillion worth of derivatives and \$8 trillion worth of loans and mortgages reference a benchmark derived from just \$500 million in average in daily trading volumes.*

J.P. Morgan has been at the forefront of finding robust alternatives to LIBOR. Externally, Chief Regulatory Affairs Officer Sandie O'Connor is chairing the ARRC, which was charged by the Federal Reserve in 2014 with selecting a new risk-free benchmark for use in the USD derivatives market, developing a voluntary adoption strategy and ensuring contractual robustness.

In dialogue with the private and public sector - including asset managers, clearing houses and policymakers - the ARRC selected SOFR and published a Paced Transition Plan in October 2017 with steps and timelines to encourage adoption.

*As of year-end 2016 according to the Federal Reserve Bank of New York

The Road Ahead: Preparing for 2022 and Adopting SOFR

Moving from LIBOR to SOFR requires various moving pieces to converge: Fresh debt linked to the new reference rate must be issued, futures and swaps markets need to grow, and lawyers have to develop more robust contractual language not only for new activities, but also to address legacy issues for existing contracts tied to LIBOR.



J.P. Morgan is drawing on and mobilizing its best in class professionals across lines of business to provide thought leadership and solutions to customers. This is truly a firm-wide effort combining business and market activity with internal education. It is critical, as this work around SOFR is anchored in reducing a financial stability risk.

Christopher Palmer

Head of the LIBOR Transition Program,
J.P. Morgan

Deconstructing SOFR: What Makes a Reference Rate

Understanding SOFR is the first step – because it inherently differs from LIBOR. While LIBOR, which is administered by ICE Benchmarks Administration, is an unsecured reference rate submitted by panel banks with different maturities and built-in credit risk, SOFR is an overnight, secured reference rate administered by the New York Fed that broadly measures the cost of borrowing cash overnight with U.S. Treasuries as collateral – also known as the repurchase market.

According to the Federal Reserve Bank of New York, over \$750 billion of daily transactions are executed in the U.S. Treasury overnight repurchase market, dwarfing the current volumes underlying LIBOR. The volumes underlying SOFR are also larger than in any other U.S. money market.

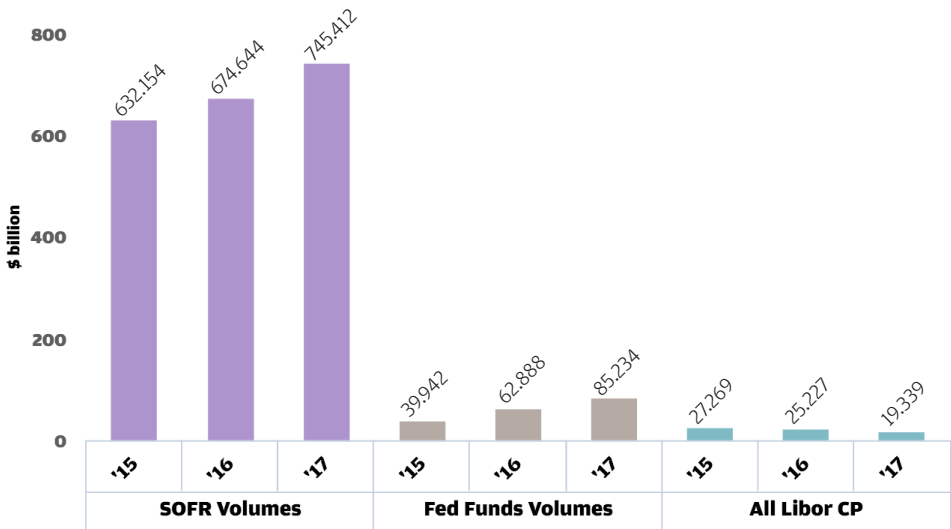


The market for repurchase agreements is a financing outlet for securities purchasers and sellers by way of posting bond collateral for cash loans. Of the 2+ trillion notional in repo outstanding, probably three quarters of that is collateralized by US Treasury securities right now. As SOFR emerges in the Fixed Income ecosystem, it's vital for participants to educate themselves on the history and idiosyncrasies of this product area.

Eric Roemer

Head of Insurance Derivatives and
Structured Finance, Rates Trading,
J.P. Morgan

SOFR: A much larger universe of transactions than Fed funds



*For 2015 we include data from August onwards to align with SOFR simulation data from the New York Federal Reserve
 Source: J.P. Morgan, FRBNY



SOFR indicates the economic cost of lending and borrowing relevant to a wider array of participants. **SOFR** transactions include money market funds, asset managers, corporates, insurance companies, securities lenders, and pension funds rather than just the interbank market.

Brad Tully

Head of North America Corporate
 Derivative Marketing,
 J.P. Morgan

Even though other reference rates were considered – including the overnight bank funding rate (OBFR) – O’Connor says the ARRC ultimately chose SOFR because it is wholly transaction-based and reflects the cost of secured financing across a variety of market participants, making it more durable over time.

Key differences between LIBOR and SOFR

LIBOR

1. Unsecured rate
2. Various maturities
3. Built-in credit component
4. Partially transaction based
5. \$500 million underlying transactions*

*Note this is for 3-month LIBOR

SOFR

1. Secured rate
2. Overnight
3. Minimal credit risk
4. Wholly transaction-based
5. \$750 billion underlying transactions

Because SOFR is an overnight rate, the market needs to model a term structure - also known as a yield curve - with different maturities to reflect expectations about where interest rates will be in the future.

This allows a corporate taking a loan to predict payment in three months' time. For both accounting and operational reasons, many loans and securities are indexed off of 1-month, 3-month and 12-month points on the curve.

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. In this vein, the world's largest exchange operator CME launched SOFR futures in May of 2018 and began clearing SOFR swaps using SOFR PAI discounting in October of 2018. The LCH Group also started clearing SOFR swaps this summer. Intercontinental Exchange expanded its offering to include 1-month and 3-month SOFR futures.

In December of 2018, open interest in CME SOFR futures hit a new high of 80,000 contracts and over 1 million contracts have traded since CME launched the products in May of 2018. Combined CME and ICE data show that approximately \$2.9 trillion in notional of SOFR futures have traded to date.



SOFR futures volumes are growing and trading has compared favorably to the initial start of Fed Funds and Eurodollar futures many years ago. This is an encouraging sign as we continue to build out more risk based on SOFR.

Terry Belton

Head of Global Portfolio Strategy,
JPMorgan Chase Chief Investment Office

Top 3 Issuers of SOFR Debt

Having only been selected in June 2017 and published in April 2018, the SOFR market is still in a nascent state. It took decades and a boom in the swaps market for LIBOR to work its way into the financial system. But J.P. Morgan and others are actively backing SOFR-linked debt to jump start the use of the benchmark in the cash market. To date, over \$41 billion of SOFR floating rate notes have been issued, according to compiled data from Bloomberg and the CME.

\$41bn+
of SOFR floating rate
notes issued to date

Federal Home Loan Bank **\$11.6bn**

- \$4bn on 11/15/2018
- \$3.6bn on 12/6/2018
- \$4bn on 12/21/2018

Fannie Mae **\$11bn**

- \$6bn on 7/26/2018
- \$5bn on 10/30/2018

Freddie Mac **\$5.1bn**

- \$1bn on 11/8/2018
- \$2bn on 12/19/2018
- \$552mn on 01/09/2019
- \$1.195bn on 01/10/2019
- \$340mn on 01/11/2019

Issuances as of January 11, 2019
Source: Bloomberg, CME

SOFR DEAL SNAPSHOT 1: First-Ever SOFR-Based Municipal Bond Deal

J.P. Morgan spearheaded the first-ever municipal bond deal using SOFR. The Triborough Bridge and Tunnel Authority (TBTA) - an affiliate of the Metropolitan Transportation Agency (MTA) in the New York area - refinanced \$107.28 million of variable rate bonds. Seventeen accounts placed orders for the bonds and the TBTA decided to fulfill new money needs by pricing another SOFR-based floating rate note the next day due to the bonds' strong investor demand. have been issued, according to compiled data from Bloomberg and the CME.



For many of the institutional investors, this was their first-ever purchase of **SOFR-based bonds**. The muni market is usually slower to move than the corporate market and there was a lot of investor education involved in the process. Hats off to the MTA - one of the largest and most sophisticated municipal bond issuers in the country - for being an industry leader in the marketplace.

Zach Effron
Public Finance,
J.P. Morgan

SOFR DEAL SNAPSHOT 2:

J.P. Morgan Chase & Co Issues \$800 million of SOFR Linked Debt After 3Q 2018 Earnings

J.P. Morgan's debt capital markets team issued \$800 million of callable floating 2-year J.P. Morgan Chase & Co. notes after the bank reported 2018 third quarter earnings. Pension funds were significant buyers among other asset managers and the deal marks the longest maturity issued in corporate SOFR-linked debt.



There is a bit of a chicken and egg situation. Issuance will increase when a term structure, a critical component, develops in the derivatives market. But creating more focus on the index by issuing debt in the cash markets will help the swaps market develop.

Peter Robert Brown

Debt Capital Markets,
J.P. Morgan

SOFR DEAL SNAPSHOT 3:

SOFR Swap: Swapping New Issuance to SOFR

J.P. Morgan worked with an institutional client in October 2018 to swap a portion of their new 2-year benchmark offering from a fixed rate to SOFR. Even though a number of floating rate notes were issued, this was a significant development in the derivatives space. In January 2019, the market saw another sizeable swap executed, further demonstrating momentum.



We believe it is the first benchmark sized fixed rate issuance that has been swapped to SOFR - this is an important first step towards growing SOFR-linked duration in the market and we are thrilled to be working in this new space.

Thomas Hughes

Head of US Dollar Linear Rates Trading,
J.P. Morgan

Legal Challenges: Tackling Fallback Language

Dealing with the trillions of dollars of contracts tied to LIBOR poses another challenge ahead of 2022. So-called fallback language – a legal mechanism in contracts to provide a back-up plan – was written under the assumption that any interruptions in the publication of LIBOR would be temporary.

Complicating matters further, legal language is inconsistent across product types. In private student loans, for example, a trustee would have to get quotes from banks or LIBOR would default to the most recently available value – in other words, become a fixed rate for a period of time.

The ARRC released public consultations to solicit feedback on contract language for floating rate notes, syndicated business loans, securitizations and bilateral loans. These consultations include proposed fallbacks to SOFR, trigger events that would prompt such a transition and methods for adjusting the spread between LIBOR and the successor rate to minimize value transfer. Consultations on proposals for other cash products, including consumer products, are expected in the future.

The Time to Act is Now

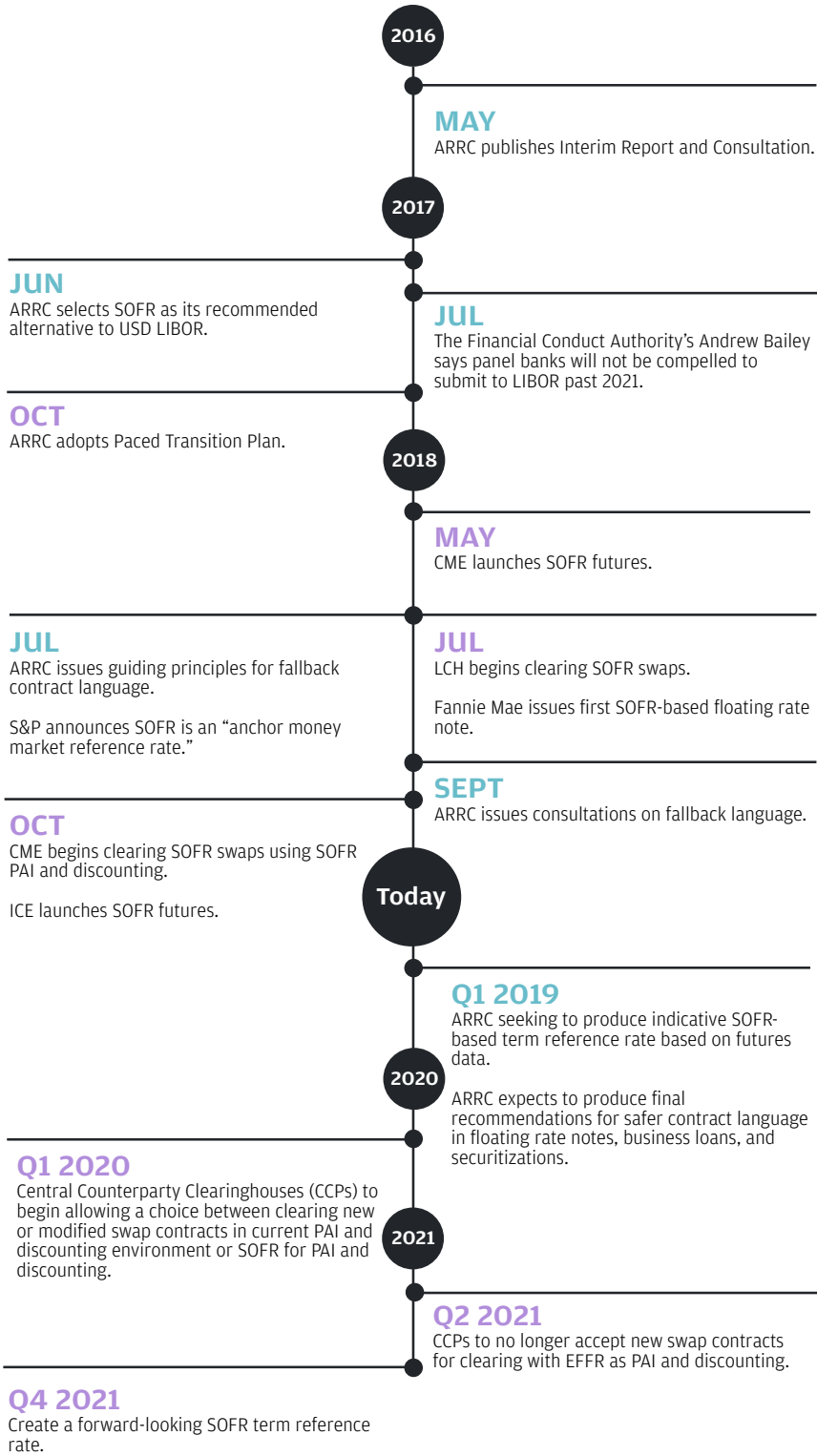


The official sector has made it clear that at some point soon **LIBOR** will no longer be considered an IOSCO compliant benchmark rate. Market participants should be reviewing their financial contracts, identifying **LIBOR** exposures, and reducing this exposure by writing contracts based on **SOFR**. They should also include more robust fallback language in new contracts tied to **LIBOR**. The time to act is now.

Sandie O'Connor

ARRC Chair and JPMorgan Chase Chief Regulatory Affairs Officer

Transition from U.S. Dollar LIBOR



■ Key ARRC and Other Developments

■ Paced Transition Plan

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