FROM USD LIBOR to SOFR

A LOOK AT LIBOR'S EXIT, SOFR'S ASCENDANCE, EMERGING ALTERNATIVES, AND ECONOMIC CONSIDERATIONS FOR POTENTIAL LITIGATION

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NOTICE

This white paper reflects the perspectives and opinions of the authors and does not necessarily reflect those of The Brattle Group's clients or other consultants. However, we are grateful for the valuable contributions of Eryn Carlson, Shaun Ledgerwood, Yingzhen Li, and Nguyet Nguyen.

Please note that this white paper is materially incomplete as the USD LIBOR transition is ongoing. This publication speaks as of April 17, 2023, and – given the many developments that will happen in quick succession in the coming months – some of its material will likely be overtaken as the transition evolves.

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Introduction

For more than 50 years, the London Interbank Offered Rate – known to most by its acronym, LIBOR – was considered "the most important number in finance."[1] The interest-rate benchmark, used to set rates on mortgages, business and student loans, and derivatives alike, was in many ways the backbone of finance, underpinning trillions of financial contracts around the globe since its creation in 1969.

Fast forward to the financial crisis of 2008, and LIBOR's years of dominance came into question when big banks were accused of coordinating to manipulate the rate and had been doing so for years. When submitting daily figures to the British Bankers' Association (BBA), which calculated the rate based on these submissions for multiple currencies and borrowing periods that varied over time, the panel banks would allegedly set their figures higher or lower to benefit other parts of their businesses. In the subsequent years, the allegations led to criminal fraud and collusion charges and billions in fines and settlements for global banks, including Barclays, UBS, JPMorgan, Citigroup, Rabobank, Deutsche Bank, and the Royal Bank of Scotland.[2]

The negative reputational impact and dwindling liquidity that followed the alleged manipulation of LIBOR led to a search for alternatives. The evolution of the efforts for benchmark reform resulted in a new framework – anchored around risk-free rates (RFRs) – with a key objective of minimizing the potential for manipulation that triggered LIBOR's downfall.

Developed by coordinated efforts that brought together the public and the private sectors in various countries where LIBOR rates were prevalent, the new framework was designed to produce robust alternatives and provide an orderly and comprehensive transition for most existing contracts referencing LIBOR rates. The framework also served as a foundation and an impetus to establish liquidity around the RFRs that apply to new contracts.

In the US, the RFR that has emerged as the regulator and policymaker-endorsed alternative to US dollar (USD) LIBOR is the Secured Overnight Financing Rate (SOFR). Defined by the Federal

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[1] Nguyen, Lananh, and Jeanna Smialek, "Libor, Long the Most Important Number in Finance, Dies at 52," *The New York Times,* January 12, 2022. https://www.nytimes.com/2022/01/12/business/libor-finance.html.

[2] McBride, James, "Understanding the Libor Scandal," *Council on Foreign Relations*, October 12, 2016. https://www.cfr.org/backgrounder/understanding-libor-scandal.

Reserve Bank of New York – which calculates and publishes the rate – as "a broad measure of the cost of borrowing cash overnight collateralized by Treasury securities,"[3] SOFR is considered a nearly risk-free benchmark rate since it is based on borrowing secured by Treasury securities, which generally are considered virtually risk-free assets. It is also a rate that reflects the actual contemporaneous market cost of borrowing because it is calculated based on observable transaction data rather than estimated borrowing rates, as USD LIBOR was.

The publication of standard non-USD LIBOR rates ended on December 31, 2021, as did two of seven USD LIBOR tenors. The remaining five USD LIBOR tenors will continue to be published through June 30, 2023; however, market participants have been strongly encouraged by regulators to avoid, or may even be precluded from, using USD LIBOR to price new transactions.

As a result, many market participants – US financial institutions included – began to embrace SOFR even before the end of 2021, and SOFR adoption rates accelerated across markets in 2022 and through the writing of this article. Although the transition is moving along, SOFR's adoption rate varies across different loan and product markets, and there are challenges ahead that market participants will have to navigate carefully.

Despite the fact that many market participants realigned their systems and business processes to adopt SOFR before USD LIBOR's limited two-tenor cessation at the end of 2021, numerous contracts with inadequate fallback provisions remain. Many contracts are likely to remain outstanding even beyond the June 2023 cessation of the rest of the USD LIBOR tenors across the cash and derivatives markets. Further, contracting parties' differing interests and preferences for which reference rate should replace USD LIBOR in such contracts – where there is no "one size fits all" approach for assessing the appropriate replacement rate – may lead to disputes.

This article focuses on the LIBOR transition in the US market. We discuss five overarching topics: (1) LIBOR's downfall and the current market for USD LIBOR; (2) the development of SOFR, which has been endorsed as the recommended replacement for USD LIBOR; (3) the transition away from USD LIBOR, including relevant transition developments and challenges surrounding some existing contracts; (4) an overview of other potential alternatives to SOFR as replacements for USD LIBOR and the potentially conflicting incentives of parties; and (5) economic considerations for potential future disputes and litigation involving legacy contracts referencing USD LIBOR.

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3 Federal Reserve Bank of New York, "Secured Overnight Financing Rate Data." https://www.newyorkfed.org/markets/reference-rates/sofr.

I. LIBOR's Downfall and the Current USD LIBOR Market

LIBOR is an indicative rate at which large banks with a significant presence in the London market state that they can "borrow short-term wholesale funds from one another on an unsecured basis in the interbank market."[4] Used as both a reference rate and a benchmark rate,[5] LIBOR was first introduced by Minos Zombanakis in 1969 and became the ubiquitous benchmark rate used by lenders – including banks and other systematically important financial institutions (SIFIs) – across financial markets by the 1980s.[6]

LIBOR accounts for only a relatively small amount of credit risk because it measures the cost of short-term (up to a year) unsecured borrowing by the largest and most creditworthy financial institutions. The perceived small amount of credit risk embedded in LIBOR is one of the reasons it served as a reference or anchor point for calculating borrowing rates for a broader set of market participants, including for less creditworthy and/or smaller entities, which were typically charged a spread – an additional borrowing cost – over LIBOR rates.

However, LIBOR came under criticism during and following the 2008 global financial crisis as allegations began to surface that the LIBOR panel banks were manipulating it for their own purposes. The attempted manipulation tainted LIBOR's image and created distrust within the global financial system.

LIBOR's susceptibility to manipulation is a consequence of its survey methodology, in which individual rate submitters across the panel member financial institutions are asked, "At what rate could you borrow funds, were you to do so by asking for and then accepting interbank offers in a reasonable market size just prior to 11 a.m. London time?" This survey methodology was called into question for its subjective nature because the phrases "reasonable market size"

[4] Hou, David and David Skeie, "LIBOR: Origins, Economics, Crisis, Scandal, and Reform," Federal Reserve Bank of New York, March 1, 2014, p. 1. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr667.pdf.

[5] A reference rate is an interest rate used as a basis for setting other interest rates, while a benchmark rate is an indicator of relative performance, often for investment returns or funding costs. *See* Hou and Skeie, p. 2.

[6] Finch, Gavin, and Liam Vaughan, "The Man Who Invented the World's Most Important Number," *Bloomberg Markets,* November 29, 2016. https://www.bloomberg.com/news/features/2016-11-29/the-man-who-invented-libor-iw3fpmed.

and “just prior to 11 a.m.” are open to interpretation – thus leaving room for potential manipulation.[7]

LIBOR’s vulnerability to manipulation was exacerbated following the 2008 financial crisis as the actual value and number of interbank market lending activity dwindled. In the aftermath of the crisis, policymakers desired benchmarks that would be based primarily on arm’s length market transactions if possible, falling back on expert judgment – like the LIBOR submissions of panel member banks – only if necessary.

Initial exploration efforts to reform instead of replace LIBOR encountered low volumes in unsecured interbank term markets (LIBOR markets), making it difficult to develop a transactions-based LIBOR replacement rate. Indeed, the liquidity in the unsecured interbank market has generally dwindled since the 1990s as banks have shifted to the repurchase agreement (repo) market for short-term borrowing, given it is more robust and virtually risk-free.[8]

The unsecured interbank market, which LIBOR is meant to reflect, also tends to become yet more illiquid in times of crisis.[9] The diminishing liquidity of the interbank market during crises resulted from depositors and other short-term creditors of banks (including other banks) preferring to minimize risk by withdrawing their deposits and holding liquidity as reserves rather than lending in the unsecured interbank market.[10] This illiquidity in the unsecured interbank market has persisted since the financial crisis, with fewer participants willing to lend, especially for longer tenors.[11, 12]

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[7] Hou and Skeie, “LIBOR,” p. 2.

[8] Note that the repo market, which includes a wide range of market participants beyond banks, reflects overnight loans to financial institutions that are typically secured by the financial institutions’ Treasury securities.

[9] Hou and Skeie, “LIBOR.”

[10] Kwan, Simon, “Behavior of Libor in the Current Financial Crisis,” *FRBSF Economic Letter,* January 23, 2009. https://www.frbsf.org/economic-research/publications/economic-letter/2009/january/libor-financial-crisis/.

[11] During the financial crisis, banks and nonbank market participants were able to access funds in direct and expanded ways from the Federal Reserve, which created a range of emergency liquidity facilities to meet the funding needs of market participants. *See* Donald Kohn, “The Federal Reserve’s Policy Actions during the Financial Crisis and Lessons for the Future,” https://www.federalreserve.gov/newsevents/speech/kohn20100513a.htm.

[12] Duffie, Darrell and Jeremy C. Stein, “Reforming LIBOR and Other Financial Market Benchmarks,” *Journal of Economic Perspectives,* 2015. https://www.aeaweb.org/articles/pdf/doi/10.1257/jep.29.2.191.

While exposure to LIBOR as a reference rate was estimated at $199 trillion in notional volume at the end of 2016, the median daily volume of the actual transactions in the three-month LIBOR market – the most heavily referenced tenor – from global systemically important banks (G-SIBs) was less than $1 billion from October 2016 to June 2017, and often averaged below $500 million.[13]

Further, only about half of G-SIBs made submissions for the USD LIBOR calculation, meaning the actual liquidity in the market was likely about half of these figures.[14] This implies that the three-month USD LIBOR rate submissions were informed from relatively small volumes – especially compared with the size of the LIBOR notional exposures that could be impacted – and increased the risk of potential manipulation through a subjective expert judgment of rate submitters at panel member banks.

A. LIBOR's Cessation

After a comprehensive review into the alleged LIBOR manipulation, the Financial Conduct Authority (FCA), LIBOR's regulator, announced in July 2017 that – as of the end of 2021 – it would no longer require LIBOR panel banks to submit the data used to calculate LIBOR.[15] This would hinder the ability of the ICE Benchmark Administration (IBA), which took over the administration of LIBOR from the BBA in 2014, to publish a LIBOR rate that was broadly representative of the market and led the IBA to announce that it would stop publishing LIBOR after December 31, 2021.[16]

While this single 2021 cessation date held for four main non-USD LIBOR-rate currencies (EUR LIBOR, CHF LIBOR, JPY LIBOR, and GBP LIBOR),[17] the IBA later announced that it would follow a

[13] Notional values reflect the value in the underlying asset being referenced by a derivative, rather than the market value of the derivative. Notional values are generally similar to market values for cash products – such as loans, bonds, and securitizations.

[14] Alternative Reference Rates Committee, "Second Report," March 2018. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Second-report.

[15] Bailey, Andrew, "The future of LIBOR," *Financial Conduct Authority,* July 27, 2017. https://www.fca.org.uk/news/speeches/the-future-of-libor.

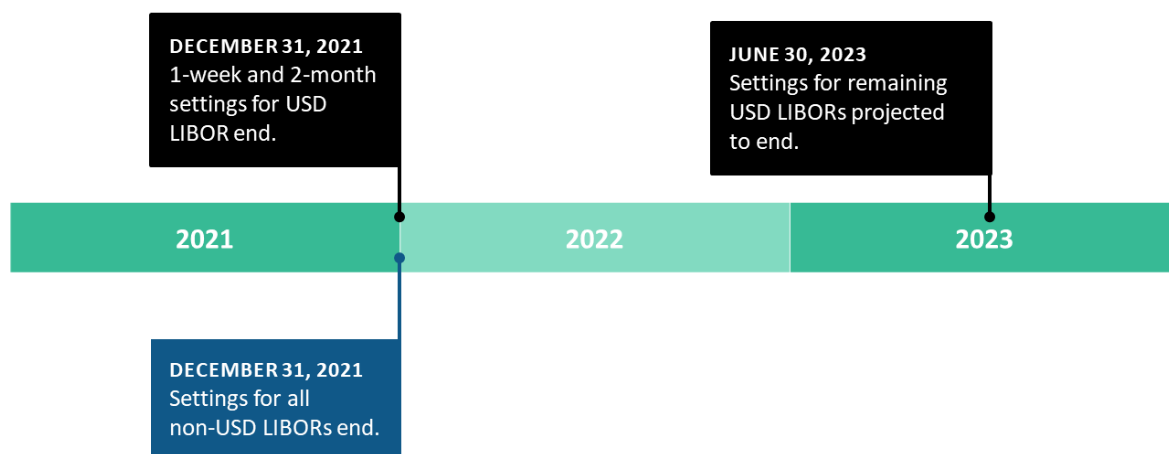
[16] ICE Benchmark Administration, "ICE Benchmark Administration Publishes Feedback Statement for the Consultation on Its Intention to Cease the Publication of LIBOR Settings," March 5, 2021. https://ir.theice.com/press/news-details/2021/ICE-Benchmark-Administration-Publishes-Feedback-Statement-for-the-Consultation-on-Its-Intention-to-Cease-the-Publication-of-LIBOR-Settings/default.aspx.

[17] Although December 31, 2021 was the permanent cessation date for many of these tenors, note that publication of the one, three, and six-month USD, GBP, and JPY LIBOR tenors was possible on a "synthetic" basis (based on a changed methodology) for a period beyond the cessation date. *See* Gibson Dunn, "The End is

two-phased approach for ceasing USD LIBOR publication. Specifically, the one-week and two-month settings for USD LIBOR would end immediately after December 31, 2021, whereas the remaining USD LIBOR rates would stop being published after June 30, 2023.[18] This 18-month extension for the remaining USD LIBOR settings was given to provide a cushion during which many legacy transactions tied to USD LIBOR rates could mature.[19]

Figure 1 below summarizes the cessation dates of USD LIBOR.

FIGURE 1: USD LIBOR'S CESSATION DATES



Source: ICE Benchmark Administration, LIBOR. https://www.theice.com/iba/libor.

Note that while the panel bank methodology will end in June 2023 for the remaining USD LIBOR settings, publication of the one, three, and six-month USD LIBOR settings will continue beyond June 30, 2023, under a "synthetic," unrepresentative methodology.[20] The FCA plans to require IBA to publish these synthetic USD LIBOR settings – intended for use only in legacy contracts – until September 30, 2024.[21]

Near: LIBOR Cessation Dates Formally Announced," March 9, 2021 (https://www.gibsondunn.com/the-end-is-near-libor-cessation-dates-formally-announced/) and ICE Benchmark Administration, "ICE LIBOR Consultation on Potential Cessation," December 2020 (https://www.theice.com/publicdocs/ICE_LIBOR_Consultation_on_Potential_Cessation.pdf).

[18] ICE Benchmark Administration, "LIBOR Cessation and 'Synthetic' LIBOR." https://www.theice.com/iba/libor.

[19] O'Malia, Scott, "Maintaining Momentum on US Dollar LIBOR," ISDA, May 26, 2022. https://www.isda.org/2022/05/26/maintaining-momentum-on-us-dollar-libor/.

[20] ICE Benchmark Administration, "LIBOR Cessation and 'Synthetic' LIBOR."

[21] Financial Conduct Authority, "FCA announces decision on synthetic US dollar LIBOR," March 4, 2023. https://www.fca.org.uk/news/news-stories/fca-announces-decision-synthetic-us-dollar-libor.

B. USD LIBOR's Outstanding Exposures

Perhaps surprisingly, despite the 2017 announcement by the FCA that LIBOR would end and repeated warnings – from the Federal Reserve Board, the Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation (FDIC) – of USD LIBOR's cessation, the aggregate use of USD LIBOR as a benchmark rate in outstanding contracts increased from 2016 to 2021.

Market participants were initially hesitant to adopt SOFR following its 2017 endorsement by regulators and policymakers, waiting on the sidelines to observe the new framework's development and postponing the transition to a new rate until it became necessary. This led to an estimated $223 trillion in outstanding notional exposures – including derivatives, swaps, and fixed-income securities – to USD LIBOR in March 2021, an increase from $199 trillion in 2016.[22]

However, since March 2021, activity in new contracts has been moving away from USD LIBOR at an accelerating rate in both cash and derivatives markets. This shift was accelerated, at least in part, by the formal recommendation of CME Term SOFR by the Alternative Reference Rates Committee (ARRC). This followed the July 2021 launch of the "SOFR First" Initiative, the LIBOR-to-SOFR transition plan for interdealer trading conventions from the Commodity Futures Trading Commission's (CFTC's) Market Risk Advisory Committee. The ARRC and SOFR, including Term SOFR, will be discussed in detail in Section II.

While the SOFR-based futures and swaps market had shown substantial growth – in terms of both trading volumes and outstanding amounts – at the time of the ARRC's March 2021 progress report, USD LIBOR exposures continued to dominate the market. However, by the time the ARRC's December 2021 report was released, the share of overall interest rate swaps referencing SOFR had increased to roughly 40%, with the percentage of interdealer swaps increasing appreciably to 80–100%. The futures market showed similar rates of quick adoption as SOFR futures volumes in November 2021 had increased 70% from their activity level in March of that year.[23]

[22] Alternative Reference Rates Committee, "Progress Report: The Transition from U.S. Dollar LIBOR," March 31, 2021, p. 2–3. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2021/USD-LIBOR-transition-progress-report-mar-21.pdf.

[23] Alternative Reference Rates Committee, "Year-End Progress Report: The Transition from U.S. Dollar LIBOR," December 2021. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2021/20211216-usd-libor-year-end-transition-progress-report.

The market has shown an increasing embrace of SOFR, as the ARRC's January 2023 meeting readout shows that the average daily notional SOFR futures volumes have more than quadrupled, increasing from under $500 billion in September 2021 to over $2 trillion in December 2022.[24]

Capital markets for cash products – such as loans, bonds, and securitizations – show a similarly accelerating trend. The majority of new floating rate private debt issuances referenced SOFR as of the ARRC's March 2021 progress report, and nearly all of them did by the time the December 2021 progress report was released.

Despite the substantially increased use of SOFR in new contracts, an estimated $223 trillion in outstanding USD LIBOR exposures remained as of the last official ARRC estimate in March 2021, $73 trillion of which were expected to mature after the June 2023 cessation date of the remaining USD LIBOR tenors.[25]

Section III will discuss how these substantial outstanding exposures are being addressed in contracts and legislation, and will detail the transition from USD LIBOR to SOFR. First, however, a discussion of SOFR's development is warranted.

II. The Development of SOFR

The Secured Overnight Financing Rate (SOFR), the leading USD LIBOR replacement selected after an exploration of several alternatives, began to be published daily by the New York Federal Reserve on April 3, 2018.[26, 27]

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[24] Alternative Reference Rates Committee, "January 19 Meeting Readout," January 25, 2023. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2023/arrc-readout-for-jan-19-2023-meeting-final-012523.

[25] Alternative Reference Rates Committee, "Progress Report," p. 2–3.

[26] Alternative Reference Rates Committee, "Second Report."

[27] Prior to April 3, 2018, FRBNY released data from August 2014 to March 2018 representing "modeled, pre-production estimates of SOFR that are based on the same basic underlying transaction data and methodology that now underlie the official publication." *See* Bowman, David, "Historical Proxies for the Secured Overnight Financing Rate," The Federal Reserve, July 15, 2019. https://www.federalreserve.gov/econres/notes/feds-notes/historical-proxies-for-the-secured-overnight-financing-rate-20190715.htm.

SOFR is a broad measure of the overnight collateralized cost of borrowing cash secured by Treasury securities.[28] SOFR draws from and encompasses transactions within the well-established and active Treasury repo market.[29] The rate therefore reflects overnight loans to financial institutions that are secured with Treasury securities, which the borrowing financial institutions own, are liquid or easy to convert into cash, and are considered to have minimal credit risk – which in turn means that SOFR is a virtually risk-free rate.[30] In addition, the volume of the transactions underlying SOFR is significantly greater than any other US money market.[31]

A. The Alternative Reference Rates Committee (ARRC)

The ARRC has spearheaded the selection and development of SOFR and the USD LIBOR to SOFR transition.

First launched in 2014, the ARRC is a group of financial market participants jointly convened by the Federal Reserve Board and the New York Federal Reserve to explore robust alternative reference rates to USD LIBOR. In coordination with the US Department of Treasury (Treasury), the CFTC, and the Office of Financial Research (OFR), the committee initially included representatives from 15 large global interest rate derivative dealers.[32]

In June 2017, the ARRC – after exploring several alternatives – recommended that SOFR, "represent[ing] best practice for use in certain new US dollar derivatives and other financial contracts," serve as a replacement for USD LIBOR.[33]

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[28] Federal Reserve Bank of New York, "Secured Overnight Financing Rate Data." https://www.newyorkfed.org/markets/reference-rates/sofr.

[29] *See* Paddrick, Mark E., Carlos A. Ramirez, and Matthew J. McCormick, "The Dynamics of the U.S. Overnight Triparty Repo Market, The Federal Reserve, August 2, 2021. https://www.federalreserve.gov/econres/notes/feds-notes/the-dynamics-of-the-us-overnight-triparty-repo-market-20210802.html.

[30] Xie, Hong, "Understanding SOFR," S&P Global, March 2, 2021. https://www.spglobal.com/en/research-insights/articles/understanding-sofr.

[31] Alternative Reference Rates Committee, "Second Report." Note that the transactions underlying SOFR average about $1 trillion in daily volume. *See* Alternative Reference Rates Committee, "Transition from LIBOR" (https://www.newyorkfed.org/arrc/sofr-transition)

[32] Alternative Reference Rates Committee, "Frequently Asked Questions: What is the Alternative Reference Rates Committee?" January 31, 2019. https://www.sec.gov/spotlight/fixed-income-advisory-committee/arrc-faqs-041519.pdf.

[33] Alternative Reference Rates Committee, "Second Report."

SOFR's design and characteristics align with several factors initially considered by the ARRC, including the depth of the market underlying the selected rate, its robustness and resilience over time, and its usefulness to market participants. It was also consistent with the attributes of the Principles for Financial Benchmarks developed by the International Organization of Securities Commissions.[34]

Tasked with promoting a successful transition from USD LIBOR to SOFR once the latter reference rate was chosen as the recommended replacement, the ARRC was reconstituted in 2018 to reflect its current membership of a larger set of private-market participants.[35] This expanded membership includes banks, asset managers, insurers, corporations, and industry trade organizations, as well as official sector ex-officio members, including banking and financial sector regulators such as the US Securities and Exchange Commission (SEC).[36]

B. SOFR vs. LIBOR

Proponents of SOFR argue that it is not subject to the many shortcomings of USD LIBOR – specifically, that LIBOR is prone to manipulation. As discussed earlier, the fact that the market that LIBOR is meant to represent is increasingly illiquid is one of the reasons why a reformed version of LIBOR – one based on the actual transactions in the interbank market – was not a

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[34] The International Organization of Securities Commissions, "Principles for Financial Benchmarks," July 2013. https://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf.

[35] Participants include the American Bankers Association, Association for Financial Professionals, AXA, Bank of America, BlackRock, Citigroup, CME Group, Comerica, CRE Finance Council, Deutsche Bank, Fannie Mae, Ford Motor Company, Freddie Mac, GE Capital, Goldman Sachs, Government Finance Officers Association, HSBC, Huntington, Intercontinental Exchange, International Swaps and Derivatives Association, JPMorgan Chase, KKR, LCH, MetLife, Morgan Stanley, National Association of Corporate Treasurers, Pacific Investment Management Company, PNC, Prudential Financial, Structured Finance Association, TD Bank, The Federal Home Loan Banks (through the Federal Home Loan Bank of New York), The Independent Community Bankers of America, The Loan Syndications and Trading Association, The Securities Industry and Financial Markets Association, US Chamber of Commerce, Wells Fargo, and World Bank Group. *See* Alternative Rates Reference Committee, "About." https://www.newyorkfed.org/arrc/about.

[36] Ex-officio members include the Commodity Futures Trading Commission, Consumer Financial Protection Bureau, Federal Deposit Insurance Corporation, Federal Housing Finance Agency, Federal Reserve Bank of New York, Federal Reserve Board, National Association of Insurance Commissioners, New York Department of Financial Services, Office of Financial Research, Office of the Comptroller of the Currency, US Department of Housing and Urban Development, US Securities and Exchange Commission, and US Treasury. *See* Alternative Rates Reference Committee, "About."

viable replacement.[37] In contrast, SOFR measures the market-based cost of borrowing cash overnight collateralized by Treasury securities, a highly liquid market.[38]

SOFR is calculated based on approximately $1 trillion in daily transactions, whereas the market that LIBOR's most actively traded tenor was meant to reflect had less than $1 billion of average transaction volume informing the daily rate setting.[39] In addition to the significant transaction volume underlying SOFR, there is a much wider range of market participants in the repo market compared to the interbank market, including asset managers, banks, corporate treasurers, insurance companies, and pension funds. Thus, the repo market reflects a broad-based measure of the private sector's near risk-free borrowing rate, making it a robust market that would be difficult to manipulate both now and in the future.[40]

Whereas USD LIBOR carries a modest amount of credit risk, SOFR and SOFR-based rates are almost risk-free and thus are generally expected to be lower than corresponding USD LIBOR rates. This introduces the need for a spread adjustment term, designed as a fixed spread over the SOFR-derived rate, to account for the typically modest credit risk difference between SOFR and USD LIBOR.

With that in mind, the ARRC has produced a recommended spread adjustment over SOFR to facilitate a smooth transition from USD LIBOR to SOFR, which matches the fallback methodology adopted by the International Swaps and Derivatives Association (ISDA)[41] for derivatives, which is discussed below.[42] This includes USD LIBOR contracts incorporating the ARRC's fallback language and legacy USD LIBOR contracts where a spread-adjusted SOFR can be selected.

Because SOFR is an overnight rate, compounding a series of historical overnight SOFR rates (an inherently backward-looking process) is necessary to derive an effective SOFR rate aligning with

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[37] Nelson, Bill. "Why Is LIBOR Being Replaced Rather Than Reformed?" Bank Policy Institute, April 2, 2019. https://bpi.com/why-is-libor-being-replaced-rather-than-reformed/.

[38] *See* Alternative Reference Rates Committee, "Transition from LIBOR" and Chatham Financial, "SOFR: A Comprehensive Guide," (https://www.chathamfinancial.com/insights/sofr-end-users-guide).

[39] Chatham Financial, "SOFR: A Comprehensive Guide."

[40] Alternative Reference Rates Committee, "Frequently Asked Questions" p. 4–7.

[41] ISDA is a private trade organization whose members comprise a broad range of derivatives market and its primary goals are to ensure robust and stable global derivatives market in a strong financial regulatory framework. *See* ISDA, "About ISDA." https://www.isda.org/about-isda/.

[42] Alternative Reference Rates Committee, "ARRC Announces Further Details Regarding Its Recommendation of Spread Adjustments for Cash Products," June 30, 2020. ARRC_Recommendation_Spread_Adjustments_Cash_Products_Press_Release.pdf (newyorkfed.org).

the various USD LIBOR tenors.[43] Nevertheless, SOFR and LIBOR can be generally expected to behave similarly under normal market conditions because they both reflect borrowing rates with a relatively low credit risk.

During crises, however, LIBOR – as noted in Section I – tends to rise because banks are less willing to lend. In contrast, SOFR tends to decrease due to monetary policy actions aimed at reducing rates and increased demand for risk-free assets from market participants, like the US Treasuries that secure the borrowing activity underlying SOFR.[44]By passing on reduced borrowing costs during crises, SOFR better reflects the goals of monetary policy to support the economy during such periods.

However, some stakeholders, particularly small and mid-size banks, do not like this quality of SOFR because they prefer a reference rate that – like LIBOR – reflects their unsecured funding costs that are affected and typically increase during adverse market conditions. A rate like SOFR, which does not increase during adverse market conditions and may actually decrease, could disadvantage the resilience of banks' balance sheets during a crisis as the banks' borrowing costs may increase, and their lending revenues from SOFR-based loans may decrease.[45]

Banks and some other stakeholders also have expressed concern about the backward-looking nature of compounded overnight SOFR, which contrasts with the forward-looking nature of LIBOR.[46] In particular, since SOFR is a backward-looking rate – meaning that the borrowing rate for a given period is only determined at the end of such period after looking back at the recent history of overnight rates – the parties will be uncertain as to the borrowing rate that will apply

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[43] Bell, Jacqueline, and Holly Quirke, "Update on Term SOFR," *JD Supra*, September 8, 2021. https://www.jdsupra.com/legalnews/update-on-term-sofr-3118255/.

[44] It is worth noting that this was not the case at the onset of the Covid-19 pandemic in March 2020, when the US Treasury market became illiquid and no market structure could handle the extreme selling pressure that resulted from widespread economic panic. *See* Group of Thirty, "U.S. Treasury Markets: Steps Toward Increased Resilience," July 2021. https://group30.org/images/uploads/publications/G30_U.S_._Treasury_Markets-_Steps_Toward_Increased_Resilience__1.pdf.

[45] Goyder, Bernard, "Smaller US banks make case for credit-sensitive rates," *Risk.net,* January 6, 2022, p. 2. https://www.risk.net/derivatives/7914941/smaller-us-banks-make-case-for-credit-sensitive-rates. swp0000.dvi (ssrn.com).

[46] Nelson, Kristianna, Kevin Jones, et al., "USD LIBOR transition: credit-sensitive fallback rates," Chatham Financial, January 21, 2022. https://www.chathamfinancial.com/insights/usd-libor-transition-credit-sensitive-fallback-rates.

to a borrowing period until the period ends. With USD LIBOR, on the other hand, the borrowing rate for a period is known at the beginning of the period.[47]

However, concerns about SOFR's backward-looking nature have been partially addressed by the ARRC's Paced Transition Plan and the CME Group's April 2021 introduction of CME Term SOFR, forward-looking term rates based on SOFR.[48] These forward-looking rates are calculated based on an average of $218 billion in daily SOFR futures transacted on CME's marketplace.[49] CME Term SOFR's rates – for one, three, six, and 12-month tenors – have all been endorsed and formally recommended by the ARRC.[50]

Despite this endorsement, the committee continues to recommend that Term SOFR's scope – as opposed to the more robust overnight SOFR and SOFR averages – be limited for the time being to certain business loan activity and select securitized products. This is due primarily to a Term SOFR vulnerability akin to one of the reasons LIBOR needed to be phased out – the relatively low volume of underlying transactions. The ARRC notes, "use of the SOFR Term Rate should be in proportion to the depth of transactions in the underlying derivatives market and should not materially detract from volumes in the underlying SOFR-linked derivatives transactions that are relied upon to construct the SOFR Term Rate itself over time and as the market evolves."[51]

The ARRC thus recommends that, in new contracts, Term SOFR is limited to two primary uses: (1) business loan activity where the transition from USD LIBOR to an overnight rate, like SOFR, has been challenging, and Term SOFR could help address any issues between parties; and (2) in securitizations with underlying assets that already reference Term SOFR, and cannot easily

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[47] Bell and Quirke, "Update on Term SOFR.

[48] CME Group, "CME Term SOFR Reference Rates – Frequently Asked Questions," April 19, 2022. https://www.cmegroup.com/articles/faqs/cme-term-sofr-reference-rates.html.

[49] Martin, Kathy A. and Maria Sagan, "Star of a New Term: ARRC Recommends CME Group's Term SOFR," McMillan, September 7, 2021. https://mcmillan.ca/insights/start-of-a-new-term-arrc-recommends-cme-groups-term-sofr/.

[50] Alternative Reference Rates Committee, "ARRC Provides Update Endorsing CME 12-Month SOFR Term Rate," May 19, 2022. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2022/ARRC_CME_12-Month_SOFR_Term_Rate.pdf.

[51] Alternative Reference Rates Committee, "ARRC Best Practice Recommendations Related to Scope of Use of the Term Rate," July 21, 2021. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2021/ARRC_Scope_of_Use.pdf.

reference other forms of SOFR. In derivatives markets, the ARRC recommends that Term SOFR derivatives only be used for end-user-facing derivatives hedging Term SOFR cash products.[52]

A competing forward-looking rate also based on SOFR, ICE Term SOFR, was introduced by the ICE Benchmark Administration (IBA) in March 2022. Similar to CME Term SOFR, ICE Term SOFR reference rates cover one, three, six, and 12-month tenors, but they are based on over-the-counter swaps instead of SOFR futures.[53]

While the IBA has suggested its ICE Term SOFR is a backup alternative to CME's Term SOFR, critics worry about the varying methodologies for the two reference rates – and the fact that ICE Term SOFR, unlike CME Term SOFR, is not endorsed by the ARRC – could create confusion.[54] CME Term SOFR has been, and remains, the preferred term reference rate in official transition efforts when the use of the overnight or average SOFR rates is not feasible.

III. The Transition Away from USD LIBOR

As June 2023 approaches, three key industry efforts have been undertaken to help market participants navigate the transition away from USD LIBOR. This includes the ARRC's Paced Transition Plan, the ISDA IBOR Fallbacks Protocol, and planned mandatory conversions by two major clearinghouses – CME and LCH – of outstanding cleared USD LIBOR trades to SOFR-based trades.

These initiatives mean that the large majority of existing derivatives will automatically transition from USD LIBOR to SOFR. For cash products (and any derivative products) that lack a path to transition from USD LIBOR, federal and state legislation has been created to establish a USD LIBOR transition path where one does not already exist or been mandated by industry initiatives. These initiatives and policies are detailed below.

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[52] Alternative Reference Rates Committee, "Summary of Key ARRC Recommendations," January 25, 2023. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2023/summary-of-key-arrc-recommendations-final-012523.

[53] ICE Benchmark Administration, "ICE Benchmark Administration Launches ICE Term SOFR Reference Rates as a Benchmark for use in Financial Instruments," March 16, 2022 (https://ir.theice.com/press/news-details/2022/ICE-Benchmark-Administration-Launches-ICE-Term-SOFR-Reference-Rates-as-a-Benchmark-for-use-in-Financial-Instruments/default.aspx); Bartholomew, Helen, "A second term SOFR: help or hindrance?" *Risk.net*, April 29, 2022 (https://www.risk.net/derivatives/7947026/a-second-term-sofr-help-or-hindrance).

[54] Bartholomew, "A second term SOFR: help or hindrance?"

A. The ARRC's Paced Transition Plan

After selecting SOFR as its recommended replacement for USD LIBOR, the ARRC moved proactively to ensure a successful transition to SOFR through voluntary adoption. The ARRC published its Paced Transition Plan in October 2017, which laid out concrete steps and a timeline to establish liquidity in the market for derivatives contracts referencing SOFR in order to encourage and facilitate the adoption of SOFR in cash products.[55, 56]

Establishing liquidity in the market for derivatives contracts referencing SOFR was a crucial step in encouraging the replacement rate's use. This, in turn, helped spur the adoption of SOFR in cash products since market participants were likely hesitant to transition to SOFR cash products without sufficient liquidity in the SOFR derivatives markets.[57]

Figure 2 below provides a timeline of the ARRC's Paced Transition Plan and key milestones.

FIGURE 2: THE ARRC'S PACED TRANSITION PLAN AND IMPLEMENTATION MILESTONES

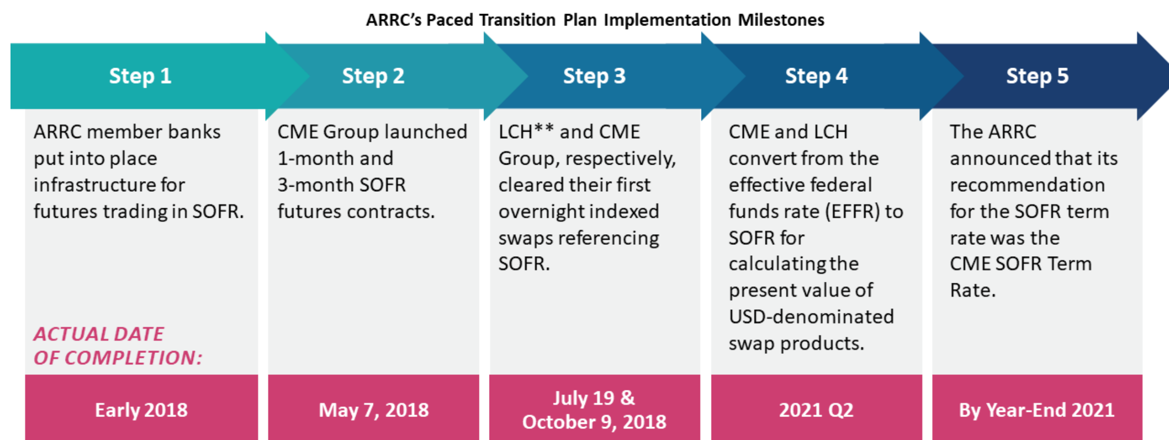
ARRC'S OBJECTIVES AND ORIGINAL TIMELINE

Step 1	Step 2	Step 3	Step 4	Step 5
ARRC members to put in place infrastructure for futures and/or overnight indexed swaps (OIS) trading in SOFR.	Begin trading in futures and/or bilateral, uncleared OIS* that reference SOFR.	Begin trading in cleared OIS that reference SOFR.	Convert from effective federal funds rate (EFFR) to SOFR for calculating the present value of USD-denominated swap products.	Create term reference rate based on SOFR derivatives.
ANTICIPATED DATE OF COMPLETION:				
2nd Half of 2018	**By Year-End 2018**	**2019 Q1**	**2021 Q2**	**By Year-End 2021**

55 Alternative Reference Rates Committee, "About." https://www.newyorkfed.org/arrc/about.

56 Alternative Reference Rates Committee, "Paced Transition Plan." https://www.newyorkfed.org/arrc/sofr-transition#pacedtransition.

57 For example, market participants often hedge exposures in the cash market with derivatives, and they prefer to have the same reference rate – i.e., SOFR – on both legs of such transactions. *See* Heckinger, Richard and Ivana Ruffani, "Hedging," *Understanding Derivatives: Markets and Infrastructure,* Federal Reserve Bank of Chicago, 2015. https://www.chicagofed.org/~/media/publications/understanding-derivatives/understanding-derivatives-chapter-4-hedging-pdf.pdf?la=en.



Sources and notes: Alternative Reference Rates Committee: "Paced Transition Plan"; "Second Report," March 2018; and "The ARRC's Paced Transition Plan for Developing SOFR Markets," July 29, 2021. (https://www.newyorkfed.org/medialibrary/microsites/arrc/files/paced-timeline-plan.pdf).

*An overnight indexed swap (OIS) is a hedging contract in which, over a given term, a party exchanges a cash flow based on a fixed interest rate for a cash flow based on a floating overnight rate (in this case, SOFR) which is compounded to match the term of the fixed rate.

**LCH, or LCH Group, is a British multi-asset clearinghouse group serving several major international exchanges.

B. The ISDA IBOR Fallbacks Protocol

In 2019, the ARRC issued recommendations for contract language – known as fallback language – in cash products, designed for voluntary use in contracts referencing USD LIBOR to help facilitate a smooth transition to SOFR.[58] At the same time, the ARRC also worked with ISDA and market participants to develop a fallback framework and a process, the ISDA IBOR Fallbacks Protocol ("the ISDA Protocol"), to address derivative contracts referencing LIBOR that will remain outstanding beyond the rate's cessation.[59]

The ISDA Protocol went into effect in January 2021. In cases where USD LIBOR is referenced in derivative contracts, the ISDA Protocol provides for a transition to a fallback rate that is

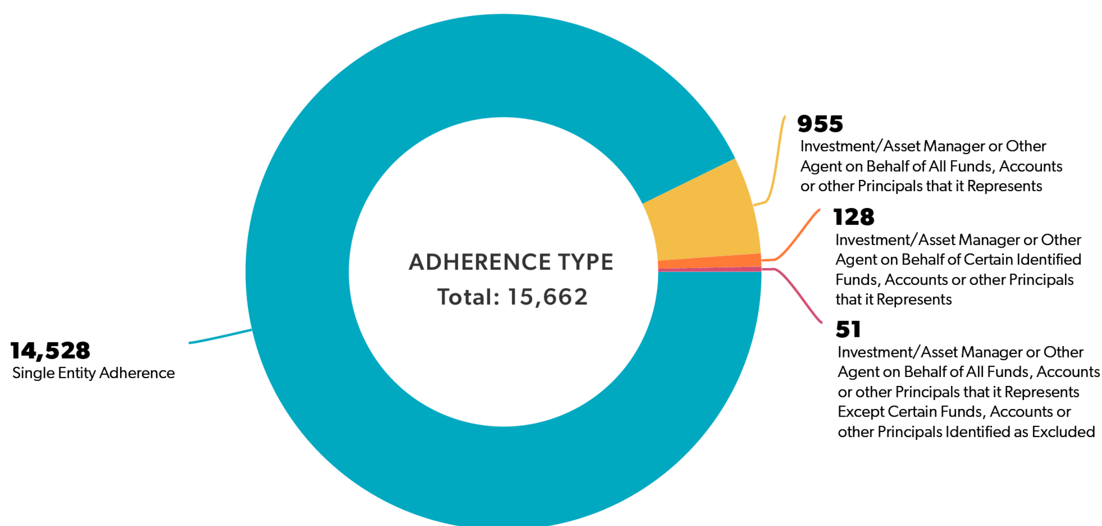
[58] Separate fallback language recommendations were made for different products, including floating rate notes, bilateral business loans, syndicated loans, securitizations, and adjustable rate mortgages. *See* Alternative Reference Rates Committee, "Summary of ARRC's LIBOR Fallback Language," November 2019. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2019/LIBOR_Fallback_Language_Summary.

[59] Alternative Reference Rates Committee, "Progress Report," p. 9.

overnight SOFR compounded over the relevant USD LIBOR tenor plus a fixed spread adjustment that is also tenor-specific.[60,61]

The ISDA Protocol is implemented as a voluntary amendment to the ISDA Master Agreements[62] when both counterparties agree to the SOFR-based fallback rate. Since its launch in January 2021, market participants have widely adopted the ISDA Protocol, as seen in Figure 3 below.[63,64] Figure 3 shows that 15,662 entities had adopted the ISDA Protocol for USD LIBOR as of March 2023.

FIGURE 3: ADOPTION OF USD LIBOR ISDA FALLBACKS PROTOCOL AS OF MARCH 2023



Sources and notes: The Brattle Group and ISDA, "Understanding IBOR Benchmark Fallbacks." https://www.brattle.com/understanding-ibor-benchmark-fallbacks/. Data sourced from ISDA's List of Adhering

[60] The compounding interval for SOFR is proportionate to the tenor of the USD LIBOR rate. For example, the fallback for a three-month USD LIBOR is comprised of SOFR compounded over a three-month period plus a fixed spread adjustment that is specific to the three-month tenor.

[61] The Brattle Group was engaged by ISDA in a series of market participant consultations that helped determine the framework and the final parameters for the spread and term adjustments in derivative fallbacks for key IBORs. *See* "Summary of Responses to the ISDA Consultation on Final Parameters for the Spread and Term Adjustments," The Brattle Group, November 15, 2019. assets.isda.org/media/3e16cdd2/d1b3283f-pdf/. The fixed spread adjustments were applicable on and after March 5, 2021. *See* Bloomberg Professional Services, "IBOR Fallbacks: Technical Notice – Spread Fixing Event for LIBOR," March 5, 2021. https://assets.bbhub.io/professional/sites/10/IBOR-Fallbacks-LIBOR-Cessation_Announcement_20210305.pdf.

[62] ISDA Master Agreements are the standard service contracts governing over-the-counter derivatives transactions between parties. *See* ISDA, "Legal Guidelines for Smart Derivatives Contracts: The ISDA Master Agreement," 2019. https://www.isda.org/a/23iME/Legal-Guidelines-for-Smart-Derivatives-Contracts-ISDA-Master-Agreement.pdf.

[63] Alternative Reference Rates Committee, "Progress Report," p. 9.

[64] Note that the ARRC also generated fallback recommendations for new cash products referencing LIBOR.

Parties as of March 27, 2023. Adhering parties are individual or agent market participants who use the new fallback rates in place of discontinued IBORs in relevant agreements. For more information about adhering parties, please visit the ISDA 2020 IBOR Fallbacks Protocol (IBOR Fallbacks Protocol) FAQs.

C. Planned Conversion of Cleared USD LIBOR Exposures

In 2022, two major clearinghouses (CME and LCH) announced plans for a mandatory conversion of outstanding cleared USD LIBOR trades to SOFR-based trades, which will take place in April and May of 2023.[65, 66] According to ISDA, "[T]hese conversions will ensure the vast majority of outstanding US Dollar LIBOR derivatives switch to SOFR-based trades before the final publication of US dollar LIBOR on June 30."[67] For the non-cleared USD LIBOR derivatives exposures not covered by the transition, the voluntary adoption of the ISDA Protocol discussed above can facilitate the transition to SOFR.[68]

D. Legislation

While the mandatory clearinghouse USD LIBOR conversions will ensure that a large majority of USD LIBOR derivatives – along with certain cash products – will transition to SOFR, and the ISDA Protocol discussed above is available on a voluntary basis to cover the remaining derivatives, only the ARRC's voluntary fallback language covers the balance of cash products. This leaves the potential for some cash products to fail to transition smoothly from USD LIBOR.

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[65] *See* O'Malia, Scott, "The Final LIBOR Hurdle," ISDA, March 27, 2023 (https://www.isda.org/2023/03/27/the-final-libor-hurdle/); LCH, "Statement on LCH's Solution for USD LIBOR® Contracts submitted for registration at LCH subsequent to the completion of LCH's Conversion Processes," LCH, August 11, 2022 (https://www.lch.com/membership/ltd-membership/ltd-member-updates/statement-lchs-solution-usd-liborr-contracts-submitted); CME Group, "CME Conversion for USD LIBOR Cleared Swaps," CME, August 2022 (https://www.cmegroup.com/trading/interest-rates/files/cme-conversion-for-usd-libor-cleared-swaps.pdf).

[66] For reference, a cleared transaction is where the counterparties trade and negotiate contracts based on standardized terms and trade through the clearinghouse, rather than bilaterally, such that they are not subject to each others credit risk but instead only the clearinghouse's credit risk. *See* PWC, "Chapter 1: Introduction to derivatives," November 29, 2020. https://viewpoint.pwc.com/dt/us/en/pwc/accounting_guides/derivatives_and_hedg/derivatives_and_hedg_US/chapter_1_introducti_US/13_derivative_catego_US.html#:~:text=Centrally%2Dcleared%20derivatives%20are%20negotiated,margin%20by%20the%20clearing%20house.

[67] Scott, "The Final LIBOR Hurdle."

[68] Ibid.

However, there is legislation aimed at establishing a USD LIBOR transition path where one is not already in place. Indeed, many USD LIBOR cash products lack the contractual language to transition to another benchmark upon USD LIBOR's cessation.[69] The challenge posed by such "tough legacy" LIBOR contracts stems from either inadequate fallback language, or a complete lack of it, in such agreements.[70]

To partially address this issue, President Biden signed the Adjustable Interest Rate (LIBOR) Act into law on March 15, 2022.[71] The so-called LIBOR Act is intended "to establish a clear and uniform process, on a nationwide basis, for replacing LIBOR in existing contracts the terms of which do not provide for the use of a clearly defined or practicable replacement benchmark rate….[and] to preclude litigation related to existing contracts."[72] The legislation addresses, among other things, loan agreements that give the lenders a right to select the replacement rate – and the failure of a lender to choose a replacement rate – by mandating that the interest rate on those loans will be converted from a LIBOR-based rate to a SOFR-based rate.[73]

Generally, the legislation prescribes that, for contracts outstanding after June 30, 2023 that reference LIBOR but have no fallback provisions (or ones that do not identify a specific LIBOR replacement or a party to select it), SOFR plus a spread adjustment consistent with the ISDA Protocol shall be the new rate. Importantly, the legislation does not address LIBOR-linked contracts not governed by US law. However, the FCA will require IBA to publish a synthetic version of USD LIBOR to help address these non-US law-governed legacy contracts until September 2024.[74]

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[69] Alternative Reference Rates Committee, "Progress Report," p. 3.

[70] Alternative Reference Rates Committee, "Progress Report," p. 11. Note that some legacy contracts have fallback language that would require a poll of banks or would use a previous LIBOR value.

[71] As part of the Consolidated Appropriations Act, 2022, HR 2471. https://www.congress.gov/bill/117th-congress/house-bill/2471/text. The law was implemented with the Final Rule published in the Federal Register on January 26, 2023. https://www.federalregister.gov/documents/2023/01/26/2023-00213/regulations-implementing-the-adjustable-interest-rate-libor-act.

[72] US Congress, Adjustable Interest Rate (LIBOR) Act of 2021, HR 4616. https://www.congress.gov/bill/117th-congress/house-bill/4616/text.

[73] That is, the law mandates that a SOFR-based rate will replace LIBOR in cases where a LIBOR contract either contains no fallback provisions or does not provide a specific replacement rate (other than LIBOR) or a determining person to select a new rate. However, while the determining person is not required to select a SOFR-based rate, failure to select any rate results in a SOFR based rate automatically becoming the replacement rate.

[74] Financial Conduct Authority, "How synthetic US dollar LIBOR will be calculated."

While the FCA's plan to publish synthetic LIBOR was also designed to address such non-US law contracts, it may lead to more challenges for the USD LIBOR transition because its existence could trigger disputes for US law contracts with fallback language in place. That is, parties may dispute whether USD LIBOR has actually ceased according to clauses triggering a fallback at the cessation of USD LIBOR in light of the availability of synthetic LIBOR into 2024.[75]

There is also state legislation addressing the transition away from USD LIBOR and the issues posed by inflexible legacy contracts. Former New York Governor Andrew Cuomo signed Senate Bill S297B/Assembly Bill 164B into law on April 6, 2021.[76] The New York legislation could help facilitate a portion of the transition away from LIBOR, given the large number of financial contracts governed by New York law.[77] The law establishes SOFR as the fallback benchmark rate while providing for "a spread adjustment and other conforming changes recommended" by the Federal Reserve Board, the Federal Reserve Bank of New York, or the ARRC.[78]

However, some argue that both the federal LIBOR Act and the New York bill are still not fully adequate as they leave "unaddressed huge swaths of USD LIBOR contracts covered by other jurisdictions – including those under English Law."[79] Inadequacies are continually being addressed on a state level. Alabama and Florida followed New York's lead, enacting the LIBOR Discontinuation and Replacement Act of 2021 in April 2021 and House Bill 925 in April 2022, respectively.[80, 81] Other states may follow suit, but the federal LIBOR Act ultimately supersedes state or local laws.

Even with this legislation, the transition away from USD LIBOR continues to pose several challenges. One such challenge is that while SOFR, with ARRC's formal endorsement, remains

[75] Bartholomew, Helen, "FCA's synthetic Libor plan could trigger US legal disputes," *Risk.net*, December 5, 2022. https://www.risk.net/derivatives/7955395/fcas-synthetic-libor-plan-could-trigger-us-legal-disputes.

[76] New York State Senate, Assembly Bill A164B. https://www.nysenate.gov/legislation/bills/2021/A164.

[77] Paul Weiss, "Governor Cuomo Introduces Proposed New York Legislation on LIBOR Replacement," January 28, 2021. https://www.paulweiss.com/practices/litigation/financial-institutions/publications/governor-cuomo-introduces-proposed-new-york-legislation-on-libor-replacement?id=39299.

[78] Fox, Jill S., and Jesse Rubinstein, "New York State LIBOR Transition Bill Signed into Law," Goulston & Storrs, April 28, 2021. https://www.goulstonstorrs.com/publications/new-york-state-libor-transition-bill-signed-into-law/.

[79] Bartholomew, Helen, "Federal bill unpicks some, not all, US Libor legacy knots," *Risk.net*, August 23, 2021. https://www.risk.net/derivatives/7866481/federal-bill-unpicks-some-not-all-us-libor-legacy-knots.

[80] Gavant, Aaron, and Samuel R. Rabuck, "Alabama Passes LIBOR Bill Substantively Identical to New York Bill," Mayer Brown, July 19, 2021. https://www.mayerbrown.com/en/perspectives-events/blogs/2021/07/alabama-passes-libor-bill-substantively-identical-to-new-york-bill.

[81] Weiner Brodsky Kider PC, "Florida Enacts House Bill 925 Addressing LIBOR Transition," *JD Supra,* April 25, 2022. https://www.jdsupra.com/legalnews/florida-enacts-house-bill-925-4905977/.

the front-runner to replace USD LIBOR, numerous alternative rates are vying for stakeholders' attention.

IV. An Overview of Other Emerging USD LIBOR Replacements

Several considerations guided the ARRC's choice of SOFR as the recommended reference rate to replace USD LIBOR.[82] These included – but were not limited to – the desire to rely on a robust benchmark that reflects the true cost of borrowing in markets, instead of being an opinion of rate submitters in panel banks; LIBOR's ongoing susceptibility to potential manipulation due to its dwindling liquidity and its tendency to increase and inflate borrowing costs during crises; and SOFR's derivation from the US Treasury repo market – which, unlike USD LIBOR, is not at risk of disappearing.

However, one of SOFR's main attributes – its near credit risk-free nature – has been cited as a concern. Given this, some stakeholders support alternative replacement rates to USD LIBOR that they perceive to better capture the borrowing costs of high-credit quality financial institutions.

A. Ameribor & BSBY

In addition to SOFR, some US lenders and market participants are considering the use of credit-sensitive rates (CSRs) such as the American Interbank Offered Rate (Ameribor) and the Bloomberg Short-Term Bank Yield Index (BSBY) as replacements for USD LIBOR.

Ameribor and BSBY are frequently discussed as alternatives to SOFR and were created primarily to mimic the credit-sensitive nature of LIBOR, in contrast to the near risk-free nature of SOFR. As previously noted, rates – such as USD LIBOR, Ameribor, and BSBY – with a credit risk component may better match some lenders' borrowing and lending rates during crises.[83]

[82] Alternative Reference Rates Committee, "Transition from LIBOR."

[83] Nelson, Kristianna, Kevin Jones, et al., "USD LIBOR transition: credit-sensitive fallback rates."

Ameribor is the creation of Richard L. Sandor, the Chairman and CEO of the American Financial Exchange (AFX). Ameribor is not intended to be a direct alternative to SOFR; instead, it is designed to serve a more niche need: namely, providing small, medium, and regional US banks – ones that do not borrow in the markets underlying LIBOR or SOFR – with a rate more representative of their borrowing costs.[84]

As Ameribor seeks to reflect the true borrowing costs of relatively small US banks, its composition differs from both USD LIBOR and SOFR. Unlike USD LIBOR's international composition, Ameribor is a domestic index calculated from the cost of overnight unsecured funding on the American Financial Exchange (AFX).[85] The AFX is an electronic marketplace where US banks can borrow and lend funds in the short term, and it allows banks to trade directly with each other on the forum; it currently represents approximately 25% of all US banks.[86]

Because Ameribor is transaction-based, proponents argue that, like SOFR, it is less susceptible to manipulation than LIBOR.[87] The underlying market volume for Ameribor is about $2.5 billion of daily transactions, a much smaller market when compared to the $1 trillion daily transactions for SOFR.[88] Furthermore, Ameribor is highly correlated with USD LIBOR and, similar to USD LIBOR, includes a forward-looking term structure, meaning that the Ameribor rate for each period is set at the beginning of the period.[89, 90]

Like Ameribor, the Bloomberg Short-Term Bank Yield Index, or BSBY, is another credit-sensitive rate with a forward-looking term structure.[91] BSBY draws from commercial paper, certificates

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84 Deichler, Andrew, "Ameribor: A Look at the Other Libor Alternative," Association for Financial Professionals, January 5, 2021. https://www.afponline.org/ideas-inspiration/topics/articles/Details/ameribor-a-look-at-the-other-libor-alternative.

85 American Financial Exchange, "AMERIBOR Methodology." https://firebasestorage.googleapis.com/v0/b/ameribor/o/resources%2Fmethodology?alt=media&token=a80f0527-e0ca-41dc-a89b-d77c50b1298c.

86 "American Financial Exchange (AFX). https://ameribor.net/american-financial-exchange.

87 Deichler, "Ameribor: A Look at the Other Libor Alternative."

88 Alternative Reference Rates Committee, "Transition from LIBOR."

89 Lyudvig, Anna, "Goodbye LIBOR: Market Participants Eye Alternatives," *Markets Media,* July 29, 2021. https://www.marketsmedia.com/goodbye-libor-market-participants-eye-alternatives/.

90 Kirsch, Brion J., "What Commercial Borrowers Need to Know About LIBOR Sunset, SOFR, BSBY and AMERIBOR," Pullcom, August 30, 2021. https://www.pullcom.com/newsroom-publications-commercial-borrowers-information-LIBOR-sunset.

91 Bloomberg Professional Services, "Introducing the Bloomberg Short-Term Bank Yield Index (BSBY)," December 18, 2020. https://www.bloomberg.com/professional/introducing-the-bloomberg-short-term-bank-yield-index-bsby/.

of deposit, US dollar bank deposits, and short-term bank bond transactions.[92] BSBY rates are based on instrument volumes that have historically averaged more than $165 billion in daily transactions and include a fallback algorithm that increases the lookback period by up to 5 days if the minimum threshold for a tenor is not met.[93] Similar to LIBOR and Ameribor, BSBY is a forward-looking rate; further, BSBY – like Ameribor – is highly correlated with USD LIBOR.[94]

Figure 4 below summarizes some of the key differences between LIBOR, SOFR, BSBY, and, Ameribor.

FIGURE 4: LIBOR AND CANDIDATE REPLACEMENT RATES COMPARISON

			LIBOR Replacement Candidates		
		LIBOR	SOFR	BSBY	Ameribor
Transaction Based	[1]	✖	✔	✔	✔
Almost Risk Free	[2]	✖	✔	✖	✖
Liquidity Rank	[3]	4	1	2	3
Forward-Looking	[4]	✔	✖✔*	✔	✔

Sources and notes:
[1–3]: Kristianna Nelson, Kevin Jones, et al., "USD LIBOR transition: credit-sensitive fallback rates."
[4]: Kirsch, Brion J., "What Commercial Borrowers Need to Know About LIBOR Sunset, SOFR, BSBY, and AMERIBOR."
*While compounded SOFR over a historical period is backward-looking, Term SOFR is forward-looking. Some argue that the ARRC's formal endorsement of Term SOFR may pre-empt most of the market's need for CSRs because the more recently developed Term SOFR would eventually achieve policymakers' objectives of having a near risk-free rate based on a deep market, while market participants would have the forward-looking term structure – similar to LIBOR's – that they have been looking for.[95] However, as discussed, Term SOFR is currently only recommended for use in specific cases and products, though other forms of SOFR are available and can be applied across all contracts that would have previously referenced USD LIBOR.

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[92] Chari, Roger S., Joel Ephross, and Phuong (Michelle) Ngo, "United States: LIBOR Transition: BSBY Out of the Gates First, *Mondaq*, June 8, 2021. https://www.mondaq.com/unitedstates/financial-services/1077246/libor-transition-bsby-out-of-the-gates-first.

[93] Bloomberg, "Bloomberg Short-Term Bank Yield (BSBY) Index Methodology," March 2021, https://assets.bbhub.io/professional/sites/10/BSBY-Methodology-Document-March-30-2021.pdf.

[94] Pensford, "BSBY Index FAQs." https://www.pensford.com/resources/what-is-bsby.

[95] Chan, Jeremy, "Term Sofr may bypass much of the market's need for CSRs," *The Global Treasurer,* September 2, 2021. https://www.theglobaltreasurer.com/2021/09/02/term-sofr-may-bypass-much-of-the-markets-need-for-csrs/.

Notably, the SEC Chairman has raised concerns that the CSR alternatives to SOFR could retain "many of the same flaws as LIBOR."[96] These concerns stem from the fact that these rates are not based on markets as robust as the daily transactions underlying SOFR and thus could face the same illiquidity problem during crises as LIBOR did. Despite being market-based, they could also be susceptible to manipulation because they are based on thinner markets than SOFR.[97]

B. Other Alternatives

There is still a developing landscape of other potential alternatives to USD LIBOR. In addition to the two CSRs mentioned above, US market participants have developed or proposed several other rates.

One example is the ICE Bank Yield Index (BYI), which measures the average yields at which investors are willing to invest US dollars over one, three, and six-month periods on a wholesale, senior, unsecured basis[98] in large, internationally active banks.[99]

Another example of an alternative rate is Tradeweb and ICE's Constant Maturity Treasury Rate (CMT). This rate provides information on daily US Treasury yields from transactions executed on Tradeweb, an international electronic trading platform. It could provide a benchmark for lending agreements, including floating rate notes (FRNs), loans, and adjustable-rate mortgages.[100]

Other alternatives include the USD Credit Inclusive Term Rate (CRITR) and USD Credit Inclusive Term Spread (CRITS), administered by the IHS Markit Benchmark Administration, and the Across-the-Curve Credit Spread Index (AXI) and its extension, the Financial Conditions Credit Spread Index (FXI), administered by Invesco.

The alternative CSRs discussed above – and potentially others yet to emerge – may be preferred by some market participants under certain circumstances as the USD LIBOR transition continues.

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[96] Hill, Jon, "SEC Chair Frets About 'Clothesless' Libor Alternative," *Law 360,* September 20, 2021. https://www.law360.com/articles/1423444/sec-chair-frets-about-clothesless-libor-alternative.

[97] Ibid.

[98] Senior loans are not subordinate to other debt, meaning – in the event of a default – creditors hold a priority claim on a borrower's assets, and must be repaid, in principle, before any other creditors receive a payment.

[99] ICE Benchmark Administration, "U.S. Dollar ICE Bank Yield Index Update," May 2020. https://www.theice.com/publicdocs/IBA_US_Dollar_ICE_Bank_Yield_Index_Fourth_Update.pdf.

[100] Tradeweb, "Constant Maturity Treasury Rates." https://www.tradeweb.com/our-markets/institutional/rates/constant-maturity-treasury-rates/.

It will be interesting to observe the evolution of market uptake of such rates post-June 2023, noting that these rates lack the endorsements provided to SOFR by policymakers and regulators.

V. Economic Considerations for Potential Litigation

Although there have been significant efforts to develop a framework and follow-up legislation to facilitate a smooth transition from USD LIBOR to SOFR, the retirement of USD LIBOR will likely lead to legal disputes in some cases. While the eventual type and amount of litigation relating to the retirement of USD LIBOR remains to be seen, there are a few possible types of cases that have been raised by legal scholars that could benefit from expert analysis.

Regarding the scope of potential litigation, various types of cash products may not be addressed by the mandatory conversion of cleared USD LIBOR trades, which will cover a large majority of derivatives. As a result, a number of cash products – especially those that will remain outstanding past the June 2023 cessation of USD LIBOR – lack an effective way to transition to a new benchmark if the parties do not agree on adding the ARRC's recommended fallback language for cash products.[101] Further, while legislation has been passed to address cash products, there are important drawbacks, especially for USD LIBOR contracts not governed by US law.[102]

In addition, while the conversion of cleared USD LIBOR trades to SOFR is mandatory and the voluntary ISDA Protocol has the potential to address most of the uncleared derivatives market, there was some evidence that certain market participants may ultimately decide to litigate rather than adopt the ISDA Protocol. Specifically, an October 2021 Bloomberg and PRMIA survey of global risk professionals and industry practitioners found that, while nearly 50% of

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[101] A December 2021 estimate from a survey of Japanese financial institutions offers some clues about such contracts. The survey found that only 45% of such non-derivative products had incorporated fallback provisions, or 0.523 trillion of 1.156 trillion in non-derivative exposures. *See* "Key Results of the Survey on the Use of LIBOR,' Financial Services Agency and Bank of Japan, March 31, 2022, slide 9. https://www.fsa.go.jp/en/news/2022/20220331/libor_suevey_english_20220331.pdf.

[102] Bartholomew, Helen. "Federal bill unpicks some, not all, US Libor legacy knots."

firms either had already signed or were planning to sign the ISDA Protocol, 23% of firms had no plans to sign, while 28% were unsure or did not know.[103]

In terms of potential litigation, companies with USD LIBOR-linked portfolios of assets or USD LIBOR-based liabilities may face claims from investors that they failed to adequately disclose the risks of USD LIBOR's cessation. These claims can vary by stakeholders, where capital providers may argue that alternative rates used to replace USD LIBOR provide inadequate returns. In contrast, borrowers may argue that they incur higher borrowing costs or other unattractive features.

Specifically, lenders of LIBOR-linked consumer products such as mortgages or credit cards may face litigation from borrowers if the offered replacement rate is perceived as unfavorable to borrowers. Lenders also could face potential litigation from investors if the replacement rate offers inadequate returns. In some cases, some market participants may seek to simply withdraw from contracts referencing LIBOR by making any number of arguments.[104] Alternatively, such participants may seek permission to use LIBOR as of a specific time or an alternative rate they prefer.

It's particularly worth noting that in cases where litigation is filed after the settings for the remaining USD LIBOR tenors have ended, an expedited expert discovery may be required to determine a temporary replacement rate for USD LIBOR while the case proceeds.[105, 106]

Indeed, given that some of the proposed fallback frameworks are recommendations rather than mandates and that the adoption of amendments to the relevant contracts is voluntary, a number of existing contracts may not be smoothly transitioned due to lack of consent, as counterparties may have different preferences and incentives for a replacement reference rate.

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103 Bloomberg and Prima, "LIBOR Transition for Derivatives," October 2021. https://www.bloomberg.com/professional/libor-transition-for-derivatives-bloomberg-prmia-survey-report/.

104 For example, plaintiffs could argue that: (1) the reason they entered into the contracts in the first place was due to LIBOR being the reference rate; (2) that the replacement rate that the counterparty is willing to agree to grants the counterparty an unfair and unanticipated windfall; or (3) that the risk of LIBOR's termination was not envisioned when they entered into the contract. In such cases, a plaintiff may seek damages for the costs of an alternative contract.

105 Neubert, John Michael, "LIBOR Phaseout: Litigation is Coming," *Michigan Business & Entrepreneurial Law Review,* 2020. https://repository.law.umich.edu/mbelr/vol10/iss1/6/.

106 Harris, Laura, Damien Marshall, et al., "Can't We All Just Get Along? Four Key Areas of Dispute in the Evolving Landscape of LIBOR Cessation Litigation," King & Spaulding via *JD Supra,* February 16, 2021. https://www.jdsupra.com/legalnews/can-t-we-all-just-get-along-four-key-2172298/.

For example, specific lenders may prefer Ameribor or BSBY because they tend to increase in crises and better match such lenders' borrowing costs and revenues. In contrast, borrowers may choose SOFR because it tends to decrease just as economic conditions deteriorate for the borrower. In addition, certain contracts – such as bonds, loans, or securitizations – may not provide fallback provisions, especially if past and pending legislative actions do not address such agreements. In other cases, even US law contracts with fallback language may proceed to litigation because the parties dispute whether USD LIBOR has indeed ceased according to the fallback language, given the existence of synthetic USD LIBOR as mandated by the FCA.

In weighing proposed alternatives to USD LIBOR in contract disputes, one needs to consider the facts and circumstances of the contract and inquire as to the original economic incentives of the involved parties, meaning that there is no "one size fits all" approach. For example, if the parties wanted a hedge against changes in the market price of credit risk, CSRs like BSBY or Ameribor may – under some circumstances – be more appropriate as a replacement for USD LIBOR because CSRs have a credit risk component.

In contrast, if the parties were originally motivated to select USD LIBOR because they viewed it as a rate that would be the least likely to undergo changes relative to other interest rate markets, SOFR may arguably be a more appropriate replacement for USD LIBOR. In other cases, the specific economic incentives of the parties may call for a proxy rate for USD LIBOR, which may be informed by expert analyses of extant markets and is not among the published proxy rates.

The availability of several alternative rates to replace USD LIBOR, and the need to weigh the facts and circumstances in each contract dispute, indicates that counsel for the counterparties in such disputes would benefit from expert analysis.

As Term SOFR trading grows, banks face potential compliance and regulatory litigation risks. Based on ARRC guidelines, derivatives referencing Term SOFR should be used only to hedge end users' exposure to loan and cash instruments. Interdealer trading in Term SOFR is not permitted. Due to complex trades and positioning related to end client needs, the intent behind banks' Term SOFR derivative trades may be hard to understand. ARRC guidelines aim to ensure ample liquidity remains on overnight SOFR derivatives – since overnight SOFR trading volume is the building block for CME's Term SOFR rates – instead of migrating to Term SOFR derivatives.[107]

[107] Ryder, James, "Banks face conduct risk threat as term SOFR trading grows," *Risk.net*, April 18, 2022. https://www.risk.net/risk-management/7946571/banks-face-conduct-risk-threat-as-term-sofr-trading-grows.

Ultimately, to what extent litigation will arise from the cessation of USD LIBOR remains unseen. Preparing proactively for the USD LIBOR transition should be a priority for all market participants. To the extent certain contracts referencing USD LIBOR become litigated, it would be prudent for counsel and their clients to consider the parties' original economic incentives for choosing USD LIBOR and their preferences for features in a replacement rate – as well as what analysis can support claims that their desired replacement rate is consistent with their original economic incentives. This will provide a starting point for considering whether a replacement rate can be agreed upon, whether it is among the existing published alternatives, or if it requires a tailored expert economic analysis and calculations.

VI. Conclusion

When the clock struck midnight on December 31, 2021, LIBOR's 50-plus-year dominance in global financial markets officially came to an end. The interest-rate benchmark can no longer be used to price mortgages, private student loans, asset-backed securities, or other types of debt, and regulators and bankers alike no longer have to worry about the rate's dwindling liquidity and susceptibility to manipulation attempts.

However, in US markets – where the June 2023 cessation of the remaining USD LIBOR tenors still looms – some transition-related challenges and potential litigation risks associated with the interest-rate benchmark transition may be yet to come. Though a replacement reference rate, the ARRC-recommended SOFR, is in place and has been rapidly adopted by market participants, some of the USD LIBOR-based cash contracts – and potentially a small set of derivative ones – that will mature after the rate's 2023 cessation lack fallback contractual language or an agreed way to transition to other benchmarks.

Even as legislation has emerged in the US to help address such legacy contracts, and the ARRC remains active to help guide the transition, such challenges remain to be addressed, and others may still emerge.[108] Legal disputes are likely to follow in certain cases.

[108] Wipf, Tom, "The World's Most Important Number Is Done. The Work to Replace It Continues," *Barron's,* February 3, 2022. https://www.barrons.com/articles/the-worlds-most-important-number-is-done-the-work-to-replace-it-continues-51643834226.

One thing, however, remains clear: if and when litigation does arise, the economic considerations and the other facts and circumstances involved in each contract will vary greatly, and expert economic analysis will be crucial in helping litigators and their clients navigate disputes in the presence of multiple alternative rates.

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