June 28, 2021

PUBLIC FIXED INCOME

SOFR Takes Center Stage as LIBOR Heads for the Exit

History

The London Inter-bank Offered Rate ("LIBOR") was incepted in 1969[1] and is a benchmark interest rate intended to represent the average cost at which major global banks offer to lend short-term to one another on an unsecured basis. It provides lenders with a base benchmark that is used in hundreds of trillions of dollars of financial instruments including securitized products, corporate bonds, variable-rate mortgages and student and business loans, to name a few. It also has been incorporated into both performance and risk benchmarks.

LIBOR is regulated by the UK Financial Conduct Authority ("FCA") in London and is administered by the Intercontinental Exchange ("ICE"). ICE calculates LIBORs for five currencies (USD, GBP, EUR, CHF and JPY) and seven tenors, ranging from overnight to a 1-year term, using a waterfall methodology which relies first on actual transactions and can end with a rate submitted based on "expert judgement". On a daily basis between 11 and 16[2] LIBOR panel banks submit where they believe they could borrow wholesale, unsecured funds. In order to calculate an average rate, ICE removes the four highest and four lowest submissions if there are 15-16 contributor banks and removes the three highest and three lowest if there are 11-14 contributor banks.

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Why Replace LIBOR?

Unsecured borrowings by banks declined following the 2008 global financial crisis, and as a result, LIBOR fixings became increasingly based on expert judgement, rather than actual transactions and were deemed to be prone to manipulation. In June 2012, multiple criminal settlements revealed significant fraud and collusion by member banks connected to the rate submissions, sowing distrust, and calling into question LIBOR's credibility as a reliable global benchmark. With actual bank borrowing transactions from which to quote LIBOR further declining post the scandal, the International Organization of Securities Commissions created Principles for Financial Benchmarks[3] that highlighted the need for benchmarks to be "anchored by observable transactions entered into at arm's length between buyers and sellers in the market for the Interest the Benchmark measures." Regulators around the globe established working groups such as the Alternative Reference Rate Committee ("ARRC") in the United States to identify alternative benchmarks that adhered to these principles in each of their markets. The ARRC is a group of private-market participants that was convened by the Federal Reserve and the Federal Reserve Bank of New York in 2014 to lead the transition away from USD LIBOR.

In July 2017, the FCA announced it would no longer compel panel banks to submit LIBOR rates after December 31, 2021. In late 2020, the U.S. Prudential Regulators[4] issued Supervisory Guidance[5] that encouraged banks to "cease entering into new contracts that use USD LIBOR as a reference rate as soon as practicable and in any event, no later than December 31, 2021." In March 2021, the FCA officially set the cessation dates for major currency LIBOR settings with June 30, 2023 being a key date for USD LIBOR, the most widely used set of daily LIBOR fixings.

Cessation Date	LIBOR Currencies
December 2021	All GBP LIBOR, EUR LIBOR, CHF LIBOR and JPY LIBOR 1 week and 2-month USD LIBOR
June 2023	All remaining USD LIBORs

SOFR and Transition Challenges

In 2017, the ARRC selected the Secured Overnight Financing Rate ("SOFR") as the alternative to USD LIBOR. SOFR is derived from roughly $1 trillion in daily transactions that occur in the overnight repo market and is a broad measure of the cost of borrowing funds collateralized by U.S. Treasuries. SOFR differs from LIBOR in two major ways: it is a secured, overnight rate, whereas LIBOR is a term, unsecured, bank lending rate with embedded credit risk and is quoted on a forward basis (e.g. 1-month, 3-month, 6-month, etc.).

With LIBOR being a forward-looking term rate, the rate for an interest period is set at the start of that period, with payment due at the end of the period, thereby providing certainty around funding costs. As mentioned, LIBOR also has an embedded credit risk component while SOFR is a risk-free, backward-looking, overnight rate. These differences have implications for how interest payments may be calculated and have raised concerns regarding SOFR's effectiveness among certain borrowers, lenders and investors, who may have different needs.

LIBOR	SOFR
London Interbank Offered Rate (LIBOR) Average interest rate for short-term, inter-bank unsecured loans	Secured Overnight Financing Rate (SOFR) Secured overnight repo rate based on U.S. Treasury repo transactions
Term (O/N, 1-mo, 3-mo, 6-mo, 12-mo)	Overnight (compounded)
Incorporates credit risk premium	No credit risk premium
Forward looking	Daily Fixing
Based on submissions from panel banks	Based on observable market transactions
Illiquid, not deep and not transparent	Liquid, deep and transparent
Reflects banks' cost of funds	Reflects cost of borrowing against Treasuries
Source: ICE Benchmark Administration	*Source: Federal Reserve Bank of New York*

A key consideration in the LIBOR transition has been how to account for the absence of a credit component in SOFR. This is particularly relevant for contracts referencing LIBOR that will subsequently shift to reference SOFR upon LIBOR's cessation, anticipated to occur in two years. For these contracts, the index rate needs to "fallback" from LIBOR to SOFR in a way that minimizes any potential value transfer among the contract participants to the extent possible. As a result of several industry-wide consultations by the ARRC and the International Swaps and Derivatives Association, standard fallback language was created for many types of financial instruments. In addition, the methodology for calculating the spread adjustment between SOFR and LIBOR was established (a five-year historical median between term LIBOR and SOFR). These spread adjustments have been fixed for all LIBOR tenors as a consequence of the FCA's official cessation announcement for LIBOR in March 2021. As an example, the spread adjustments to convert from 1-month USD LIBOR and 3-month USD LIBOR have been set at SOFR + 11.4 basis points and SOFR + 26.2 basis points, respectively. The table below details the official spread adjustments announced across various tenors and currencies.

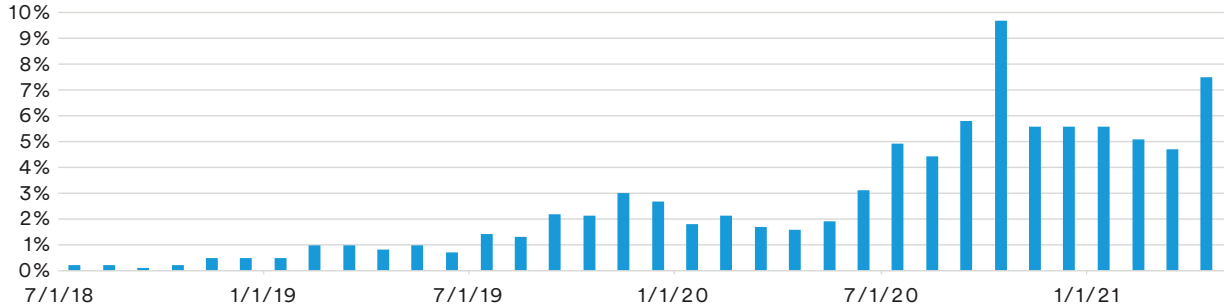
Final Spread Adjustments (in basis points)

Tenor	GBP	EUR	CHF	JPY	USD
O/N	-0.2	0.2	-5.5	-1.8	0.6
1W	1.7	2.4	-7.1	-2.0	3.8
1M	3.3	4.6	-5.7	-2.9	11.4
2M	6.3	7.5	-2.3	-0.4	18.5
3M	11.9	9.6	0.3	0.8	26.2
6M	27.7	15.4	7.4	5.8	42.8
12M	46.4	29.9	20.5	16.6	71.4

In response to one of the challenges facing the market adoption of SOFR due to the lack of a forward-looking term structure, the ARRC recently announced it will not be in a position to recommend a forward-looking SOFR term rate by the original target date of mid-2021. This delay is due in large part to the lack of volume in the SOFR derivatives markets which is a prerequisite to creating a robust SOFR term structure.

Subsequently, on June 8, 2021, the Commodity Futures Trading Commission's Interest Rate Benchmark Reform Subcommittee announced a plan known as the "SOFR-First" initiative that recommended July 26, 2021 as the date for interdealer brokers to replace the trading of LIBOR swaps with SOFR swaps. The SOFR-First initiative is designed to increase volumes linked to SOFR in the U.S. derivatives market and is an important development in the USD LIBOR transition process. The plan was concurrently endorsed by the ARRC with New York Fed President Williams commenting, "If you are active in derivatives markets, circle July 26 on your calendar" and Fed Vice Chair for Supervision Quarles noting, "There is now no excuse to delay transition as the path that leads beyond LIBOR could not be clearer."[6]

Percentage of U.S. Derivatives Market Linked to SOFR



Source: Claris Risk-Free Rates Adoption Indicator, as measured by DV01

Another perceived challenge is SOFR's lack of a credit component. Because it is a risk-free rate, it lacks credit sensitivity and therefore does not reflect a typical bank's borrowing or funding costs. As a result, it can change the nature of the asset-liability match that banks and lenders face between their borrowing and lending costs. Furthermore, there is a concern that SOFR could potentially reduce the availability of credit during periods of market stress. Because SOFR is derived from underlying collateralized U.S. Treasury transactions, SOFR will tend to decline in times of market stress, while LIBOR, as an unsecured rate with an implied credit component, will tend to rise in times of market stress, pushing borrowers' rate of interest lower in an environment when banks'/ lenders' funding costs are typically rising. As a result, banks / lenders could become more reluctant to lend, thereby reducing credit availability or increase pricing. Some market participants have advocated for credit-sensitive alternatives to better align their risk by adopting short-term indices that have a credit component which tend to widen during periods of market stress.

In an effort to find another benchmark floating-rate index incorporating a credit component, other alternative credit sensitive rates have been developed including the Bloomberg Short-Term Bank Yield Index ("BSBY"), the American Interbank Offered Rate ("AMERIBOR"), and Bank Yield Index ("BYI"), all of which are forward looking and generally highly correlated to LIBOR. BSBY is administered by Bloomberg Index Services Limited and its objective is to reflect the average rate at which banks borrow unsecured while AMERIBOR is administered by the American Financial Exchange ("AFX"), an electronic exchange for over 1,000 U.S. banks and financial institutions, and its purpose is to reflect member banks' and financial institutions' actual unsecured borrowing costs. BYI is administered by the ICE Benchmark Administration and is intended to reflect the rate at which banks can borrow on the AFX. This index is expected to launch in the second half of 2021, while BSBY and AMERIBOR already exist. The extent to which these rates will be adopted in particular markets in the future is an open question as many of these alternatives currently have little activity in either the cash or derivatives markets associated with them.

> "There is now no excuse to delay transition as the path that leads beyond Libor could not be clearer."
>
> **— Randal Quarles, Fed Vice Chair for Supervision**

A third challenge, though partially mitigated, is the ability to legally transition legacy contracts from LIBOR to an alternative rate where inadequate fallback provisions exist. This has been a central focus for the ARRC as part of the overall LIBOR transition. In April 2021, New York Governor Cuomo signed legislation addressing such "hard legacy" contracts governed by New York law. These are contracts that have no LIBOR fallbacks, or fallback to an alternative LIBOR setting, and primarily address contracts that are practically very difficult to remediate for LIBOR transition due to market dynamics such as affirmative consent requirements involving dispersed stakeholders. This legislation established a targeted solution for these contracts to be able to transition from LIBOR to ARRC-recommended fallbacks, potentially avoiding costly litigation for all parties. Importantly, the legislation also provides a safe harbor from liability to any party with the discretion to select a successor rate to LIBOR, provided such party chooses SOFR, the ARRC's preferred index. Efforts to address "hard legacy" contracts continue in the U.S., with legislation at the Federal level also currently being considered.

We believe that the remediation of legacy contracts will be largely asset class-specific. This will be driven by market participants within each sector, as well as the needs of a multitude of participants including investors, borrowers, trustees, and servicers. As an example, for the Structured Finance sector, the Agencies will continue to take a leading role in setting new conventions. For bilateral business loans, remediation will require direct agreement between the lender and borrower. Broadly syndicated securities with inadequate fallback provisions will likely look to the New York (and potentially Federal) legislation. As part of MetLife Investment Management's Transition Plan (discussed below), we are tailoring our remediation efforts at the asset class level.

Market Activity/Issuance

IIn the ARRC's most recent Progress Report,[7] it is estimated that there are $223 trillion in outstanding exposures to USD LIBOR, with the majority representing derivative exposures. The ARRC also noted in their report that only two-thirds of current LIBOR contracts and instruments are expected to mature before June 2023, leaving a great deal of LIBOR-based contracts that need to be resolved prior to LIBOR's final cessation date.

USD LIBOR Market Footprint by Asset Class[8]

	Currently Outstanding ($TN)	Maturing After June 2023 ($TN)
Over-the-Counter Derivatives	171	83
Exchange Traded Derivatives	43	2
Business Loans[9]	4.8	2.3
Consumer Loans[10]	1.4	0.9
Bonds	1.1	0.3
Securitizations	1.6	1.6
Total USD LIBOR Exposure	**223**	**90**

By background, Fannie Mae issued the market's first-ever $6 billion SOFR securities via a three-part deal in July 2018, quickly followed by financial issuers such as MetLife that issued the first-ever $1 billion, two year, SOFR corporate bond deal in August 2018. MetLife has been, and continues to be, an active issuer in the SOFR market, issuing 11 deals totaling over $5.0 billion to date.

Two notable market areas that have been most active in issuing bonds linked to the SOFR index have been the Government and Corporate sectors. In Government, issuance has been primarily driven by issuers such as Federal Farm Credit Banks, the International Bank for Reconstruction & Development and Federal Home Loan Banks, etc., while in Corporates, issuance has been predominately driven by the Financial sector. Over the past several months, however, there has been a pickup in issuance in the Industrial and Utility subsectors.

Recently, potential LIBOR replacement alternatives away from SOFR have been gaining more attention as some market participants question whether SOFR is the best option and believe a multi-rate environment may be warranted. In April, the first swaps trade and bank bond linked to the BSBY benchmark were issued, followed in May by the first nonfinancial company which issued a syndicated loan utilizing the BSBY index. Furthermore, in April, the Loans Syndications & Trading Association included AMERIBOR as a fallback benchmark option for its suggested contract provisions following the discontinuation of LIBOR and provided sample credit-sensitive rate language that can be used as a potential replacement to LIBOR.

MetLife Investment Management Transition Plan

MetLife Investment Management ("MIM") has developed a program to manage the risks associated with the discontinuance of the LIBOR reference rates via a coordinated, multi-team transition plan ("Transition Plan"). In addition to a central LIBOR Transition Team, multiple areas within MIM are actively involved in the transition program including portfolio managers, individual asset sector specialists, as well as the Legal and Information Technology ("IT") departments. MIM's detailed Transition Plan includes:

- an inventory of all existing global IBOR exposures in MIM's client portfolios
- identification of market, operational, IT, financial and potential regulatory risks
- an assessment of transition dependencies

Execution of the Transition Plans across the globe allows MIM to: (i) evaluate the collective IBOR impact across investment and hedging transactions managed by MIM, (ii) consider all relevant components of the IBOR transition process, and (iii) take appropriate action to address LIBOR transition issues impacting MIM client portfolios. MIM continues to assess current and alternative reference rates' merits, limitations, risks and suitability for client portfolios in light of evolving market and regulatory developments and risk/return considerations.

Industry involvement has been a central component of MIM's Transition Plan and provides a forum for MIM to advocate on issues related to the general transition away from LIBOR. MetLife has been a member of the ARRC since 2018 and participates in many of the ARRC's Working Groups. On the ARRC, MetLife also works with both sell-side and buy-side market participants to facilitate the industry's move away from LIBOR through the promotion of the ARRC's Paced Transition Plan. To address LIBOR transition issues for particular asset classes, MetLife works with a number of industry trade organizations including the Structured Finance Association, the Mortgage Bankers Association, the American Council of Life Insurers and the Loan Syndications and Trading Association.

Endnotes

[1] https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr667.pdf

[2] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf

[3] Ibid

[4] The U.S. Prudential Regulators include the Board of Governors of the Federal Reserve System, the Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation

[5] SR 20-27: Interagency Statement on LIBOR Transition. https://www.federalreserve.gov/supervisionreg/srletters/SR2027.htm

[6] 20210608-arrc-release-supporting-mrac-announcement-final (newyorkfed.org)

[7] https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2021/20210322-arrc-press-release-USD-LIBOR-Transition-Progress-Report.pdf

[8] Federal Reserve staff calculations, BIS, Bloomberg, CME, DTCC, Federal Reserve Financial Accounts of the U.S., G.19, Shared National Credit, and Y-14 data.

[9] The figures for syndicated and non-syndicated business loans do not include undrawn lines. Nonsyndicated business loans exclude CRE/commerical mortgage loans.

[10] Estimated amounts maturing after June 2023 based on historical prepayment rates.

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Ms. Klepper is a member of the Short Duration team in MIM's Public Fixed Income business unit. Previously she assisted in managing MetLife's Workout Unit portfolio through the restructuring of distressed or defaulted corporate credits. Ms. Klepper has been with MetLife for sixteen years and has thirteen years of investment experience, including three years of credit analysis. She has held various positions across MetLife Investments including trading assistant for the High Yield/ Bank Loan/ Emerging Markets trading desk and internal Hedge Fund as well as a Bank analyst in the Global Credit Research unit. Previously, she worked at the Bank of New York as a Corporate Trust Associate in the International Structured Finance Unit and at Deutsche Bank in the Project Finance Unit as a Client Service Administrator. Ms. Klepper received her B.S. and MBA from Rider University.

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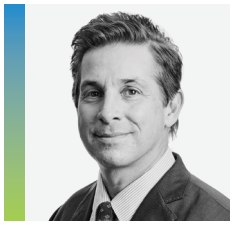
Mr. Demetrick is a Managing Director in the Structured Solutions unit part of MIM's Public Fixed Income business. He is responsible for structuring, executing and managing derivative transactions, particularly within the credit derivatives markets. He also oversees the Derivatives Analytics unit at MetLife. Mr. Demetrick joined MetLife in 2003 in the Market Strategy Group, where he focused on cross-sector asset allocation. In this role, he worked extensively with the asset origination areas within the company, in addition to portfolio management. Prior to joining MetLife, Joe spent 11 years in the financial sector at Shawmut Bank, Nomura Securities and Mizuho Corporate Bank. At those firms, he held roles within the risk management and trading areas. Joe holds a B.S. in accountancy from Bentley College and an MBA in finance and statistics from New York University. He is a CFA charterholder. Mr. Demetrick is the current Chair of the ACLI's Derivatives Policy Working Group and represents MetLife on the Alternative Reference Rate Committee (ARRC). He also represents MetLife on the CFTC Market Risk Advisory Committee's (MRAC) Interest Rate Benchmark Reform Subcommittee.



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Mr. Pavlak is a portfolio manager and leads Short Duration for MIM's Public Fixed Income business unit. He is a portfolio manager for the Short Term Actively Managed Program (STAMP). He joined MIM in September 2017 in connection with the acquisition of Logan Circle Partners (LCP) by MetLife. He served as a portfolio manager for the STAMP strategies at LCP. Prior to joining LCP in 2008, he was a senior managing director and head of fixed income at Bear Stearns Asset Management. He joined Bear Stearns & Co. in 1990 and BSAM in 1992, where he was responsible for BSAM's traditional strategies that included cash, enhanced cash, short-term, intermediate, core and core plus. Prior to joining Bear Stearns, he was a vice president and senior investment officer at Beechwood Securities, specializing in fixed income investments. Mr. Pavlak received a Bachelor of Science degree in finance from Fairleigh Dickinson University, earned an MBA in finance and economics from the Stern School of Business at New York University. He is a CFA® charterholder.

About MetLife Investment Management | Public Fixed Income

MetLife Investment Management's[1] Public Fixed Income Group has over $360 billion[2] in assets under management. We offer institutional clients around the world a bottom-up, fundamental security selection approach to fixed income investing. We have a deep and experienced team of over 140 Public Fixed Income investment professionals averaging 17 years of industry experience with 20 portfolio managers averaging 23 years. The investment decisions and idea generation are informed by a team-based culture with portfolio managers, credit analysts and traders contributing to trade ideas, and risk management is layered into every step of the portfolio construction process and supplemented by independent oversight. We seek to build long-lasting relationships through a comprehensive approach to understanding each of our client's needs and objectives, and constructing a fixed income portfolio that best meets their goals.

For more information, visit: **investments.metlife.com/public-fixed-income**

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[2] As of March 31, 2021. Includes all public fixed income assets managed by MIM.

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Appendix

This appendix contains details for the preceding charts and provides additional information for greater accessibility.

Percentage of U.S. Derivatives Market Linked to SOFR

Note:

- All values are approximate
- Source: Claris Risk-Free Rates Adoption Indicator, as measured by DV01

Month/Day/Year	Percentage of Market
7/1/18	0.25%
8/1/18	0.25%
9/1/18	0.12%
10/1/18	0.25%
11/1/18	0.50%
12/1/18	0.50%
1/1/19	0.50%
2/1/19	1.00%
3/1/19	1.00%
4/1/19	0.80%
5/1/19	1.00%
6/1/19	0.70%
7/1/19	1.45%
8/1/19	1.30%
9/1/19	2.20%
10/1/19	2.10%
11/1/19	3.00%
12/1/19	3.65%
1/1/20	1.75%
2/1/20	2.10%
3/1/20	1.70%
4/1/20	1.65%
5/1/20	1.95%
6/1/20	3.05%
7/1/20	4.95%
8/1/20	4.45%
9/1/20	5.85%
10/1/20	9.60%
11/1/20	5.60%
12/1/20	5.60%
1/1/21	5.60%
2/1/21	5.05%
3/1/21	4.70%
4/1/21	7.50%