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NEUBERGER BERMAN

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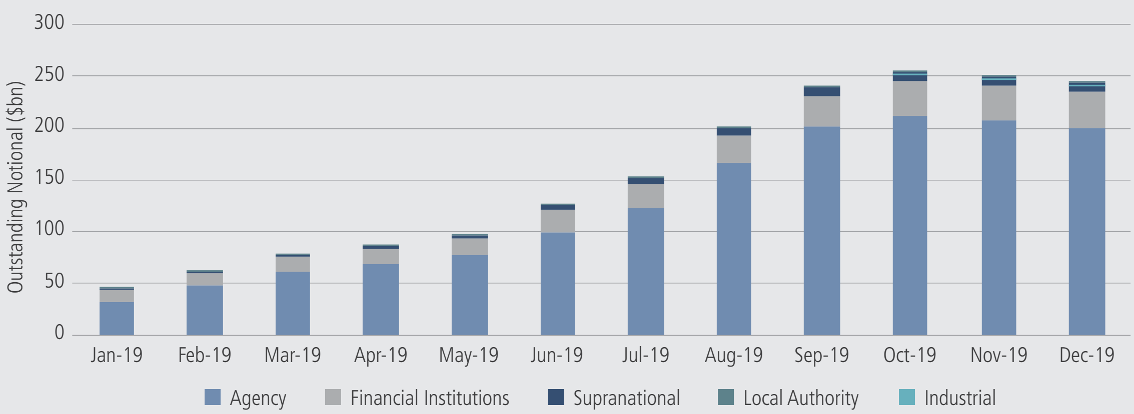
Life after LIBOR: Two Years and Counting

A year ago we published our thoughts on the significant regulatory and operational challenge of the proposed transition away from the ubiquitous LIBOR benchmark. Now, with less than two years to go before LIBOR is due to be phased out, we provide an update on what regulators, markets and Neuberger Berman have been doing to prepare. There is still a lot to be accomplished, but we are encouraged by the level of co-operation between industry and regulators and by the rapid growth in SOFR-linked financial markets.

Executive Summary

- Progress by Regulators and Government Agencies
  - Regulations to remove tax liabilities arising from benchmark changes have been proposed in the U.S.
  - Consultations are underway regarding the publication of Secured Overnight Funding Rate (SOFR) averages and indices.
  - The important Federal Home Loan Banks have been instructed to cease LIBOR-linked transactions that mature after 2021.
- Progress in Financial Markets
  - The SOFR-linked cash and derivative markets have grown rapidly during 2019.
  - By the end of December 2019, there was almost $250 billion worth of SOFR-linked cash securities outstanding, more than $600 billion of outstanding notional value in SOFR swaps, and more than $2 trillion of open interest in SOFR futures.
  - Concerns about the volatility of SOFR are not justified, in our view.
- Progress on Fallback Language
  - The Federal Reserve Bank of New York's Alternative Reference Rates Committee (ARRC) has released final recommended fallback contract language for new issuances of cash securities such as FRN, syndicated loans, bilateral loans, securitizations and ARMs.
  - The International Swaps and Derivatives Association (ISDA) has published its consultation results regarding methodologies for spread adjustments between LIBOR and replacement rates such as SOFR.
- Progress at Neuberger Berman
  - At Neuberger Berman, a committee has been meeting to monitor developments, identify risks and create a task list for all relevant areas of our business.
- Looking Forward—Challenging But Promising
  - Two years is a challenging timeframe and there are issues still to be resolved, but we are encouraged by the level of co-operation between industry and regulators and by the rapid growth in SOFR-linked financial markets.

RAPID GROWTH IN THE SOFR-LINKED CASH SECURITIES MARKET



Source: Bloomberg.

It has been a year since we published our white paper, "Life after LIBOR", in which we asked:

- What went wrong with the world's most widely used benchmark interest rate, LIBOR?
- Why was the Secured Overnight Financing Rate (SOFR) created to replace USD LIBOR?
- What is the LIBOR transition plan?
- What are the implications for investors?[1]

Since the publication a lot of progress has been made by regulators and government agencies, as well as private sector participants, to develop robust fallback language, provide clarity on tax-related issues and support the adoption of SOFR.

In this update we will review the major developments of LIBOR transition since our last publication, and explain how Neuberger Berman is preparing itself for the end of LIBOR. Last but not least, we want to re-emphasize that, as clearly expressed by regulators, the discontinuation of LIBOR is "not a possibility, but a certainty."[2]

Progress by Regulators and Government Agencies

As mentioned in the previous paper, robust fallback language is necessary for contracts that reference LIBOR, in order to account for its permanent cessation. After consultations with market participants, the Federal Reserve Bank of New York's Alternative Reference Rates Committee (ARRC) has finally released the recommended fallback language—the legal provision that applies when an underlying reference rate in a product is discontinued or unavailable—for new issuances of floating rate notes (FRN), syndicated loans, bilateral loans, securitizations and residential adjustable-rate mortgages (ARM). See the Fallback Language section below for more details. For legacy contracts, the ARRC continues to meet with the New York State legislature to seek legislative relief.

Progress has also been made on LIBOR spread adjustments, which reflect credit risk and other premia between LIBOR and the replacement rates. The International Swaps and Derivatives Association (ISDA) has published the results of consultation on final parameters for benchmark fallback adjustments. We also cover that in more detail in the Fallback Language section below.

Guidance has also been provided to address tax uncertainties. The U.S. Treasury and the Internal Revenue Service (IRS) released proposed regulations that would allow taxpayers to avoid adverse tax consequences from moving away from LIBOR to certain alternative reference rates, such as SOFR. Because modifying terms of debt, derivative and other financial contracts to replace a reference rate might be treated as a taxable transaction, these proposed regulations provided great certainty and clarity to taxpayers as they move away from LIBOR to other reference rates.

Meanwhile, regulators and government agencies continue to promote widespread adoption of SOFR. The New York Fed has requested public comment on publishing SOFR averages (tenors of 30, 90, and 180 calendar days) and a SOFR index in the first half of 2020. These publications would be intended to make it easier for market participants to understand and reference SOFR in cash products.

The Federal Housing Finance Agency (FHFA) also instructed the 11 Federal Home Loan Banks (FHLB) that, by the end of 2019, they should no longer make any investments tied to LIBOR that mature after the end of 2021. Furthermore, by the end of March 2020, they should no longer enter into any other LIBOR-linked transactions with maturities beyond the end of 2021. Since FHLBs are the largest LIBOR FRN issuers, this decision will potentially lead to billions of dollars' worth of SOFR FRN issuance in the near future.

Last but not least, Treasury has also started to study the potential introduction of a SOFR FRN, which would be another significant step forward in developing the SOFR market. Some analysis[3] has shown that the demand for a SOFR FRN would be robust, and the pricing would be in line with or even better than the existing T-Bill FRN pricing.

[1] Thomas A. Sontag & Stone Jiang, "Life After LIBOR" (January 2019), at https://www.nb.com/_layouts/www/transfer.aspx?URL=/insights/life-after-libor.
[2] Source: Opening Statement of Chairman J. Christopher Giancarlo before the Market Risk Advisory Committee Meeting, July 2018.
[3] Source: "Report to the Secretary of the Treasury from the Treasury Borrowing Advisory Committee of the Securities Industry and Financial Markets Association", July 30, 2019.

Progress in Financial Markets

Financial markets linked to SOFR have deepened consistently through 2019. Since the release of SOFR in April 2018, more and more SOFR-linked financial products have been launched, including cash securities, futures and swaps. Most recently, in the beginning of 2020, the Chicago Mercantile Exchange (CME) launched SOFR options trading.

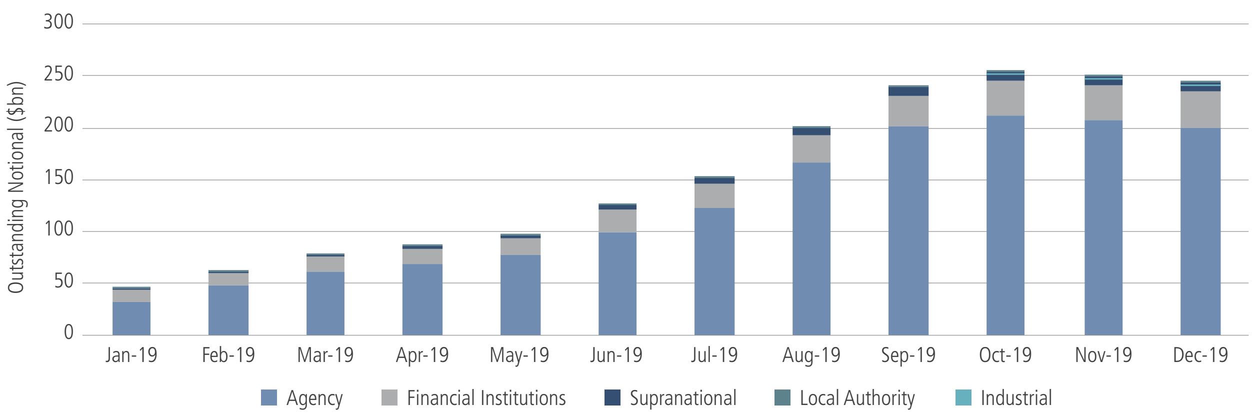
In the cash securities market, the notional amount outstanding of SOFR-linked floating rate instruments has increased from $46 billion at end of January to $247 billion at end of December 2019. Government agencies are the largest issuer group, accounting for 81% of all the outstanding notional amount, followed by financial institutions at 14%.

The futures and swaps markets have seen fast growth as well. As of end of December, the average daily notional volume and open interest of SOFR futures have reached $153 billion and $2.1 trillion, respectively. The outstanding notional balance of cleared SOFR swaps had reached $664 billion.

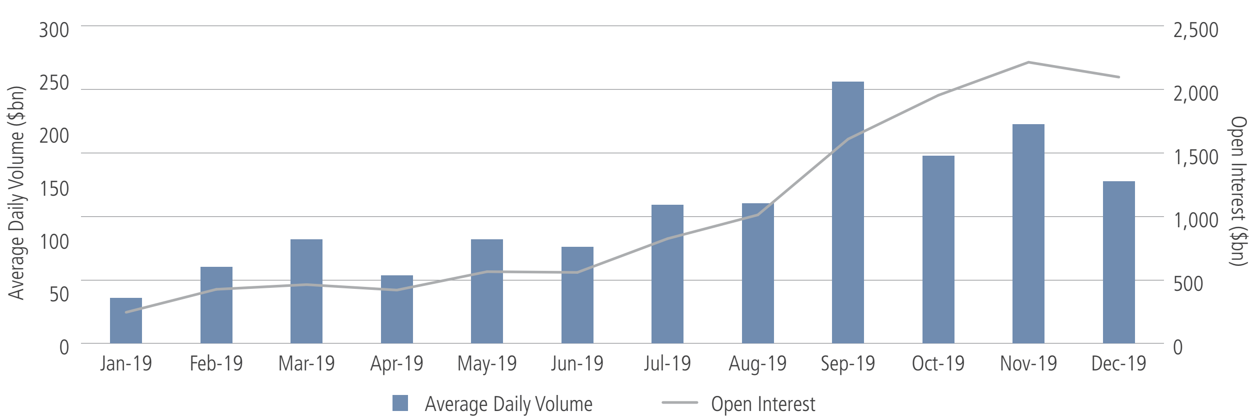
More liquidity is needed for regulators to feel comfortable publishing a SOFR term structure. Even though the growth has been strong for both SOFR futures and swaps markets, the Eurodollar markets are still significantly larger in size. For example, counting the first eight quarterly futures contracts at December 2019 month-end, the total open interest of 3-month SOFR futures was only about 3% of that of the 90-day Eurodollar futures.

FIGURE 1. RAPID GROWTH IN BOTH CASH AND DERIVATIVE SOFR-LINKED PRODUCTS

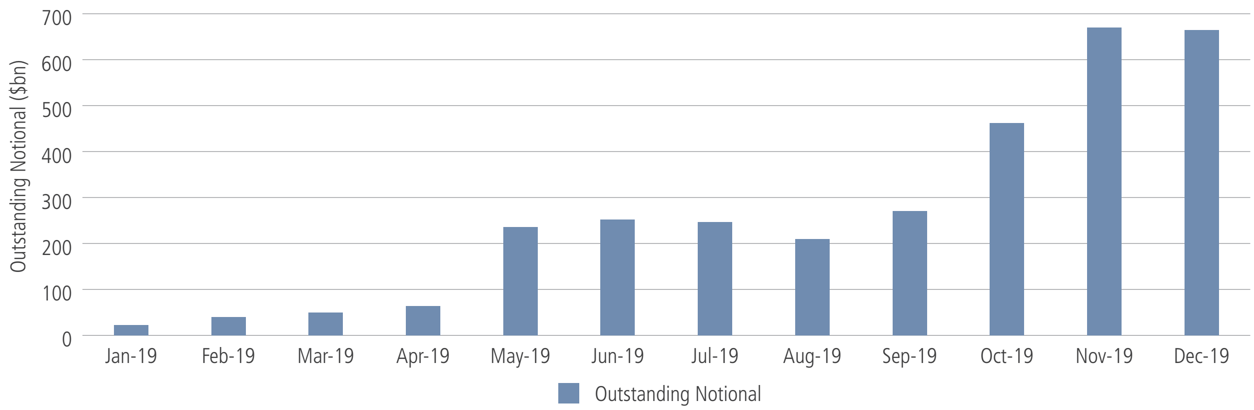
SOFR-linked cash securities outstanding notional amount



SOFR-linked futures market volume on Chicago Mercantile Exchange (CME) and Intercontinental Exchange (ICE)



SOFR-linked swaps outstanding notional balance on Chicago Mercantile Exchange (CME) and LCH

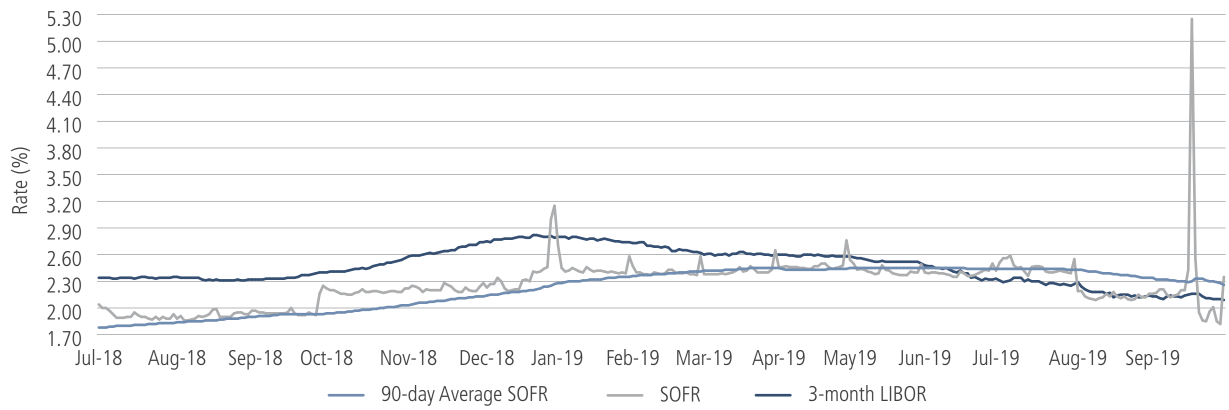


Source: Bloomberg, LCH, CME Group. Data as of December 31, 2019.

Furthermore, the spike in SOFR on September 17, 2019, when it jumped by 282 basis points, has led to some concern that SOFR is too volatile to be used in financial contracts. We don't think that's the case. Financial contracts reference averages of SOFR rather than a single day's realization of SOFR. SOFR is inherently volatile as it's a daily rate based on real transactions, but averages of over a period of time will smooth out any day-to-day fluctuations. In fact, the indicative data published by the New York Fed (see figure 2) show that the 90-day average of SOFR is less volatile than 3-month LIBOR. With the upcoming publication of SOFR averages and the SOFR index in the first half of 2020, market participants should feel more comfortable incorporating SOFR averages into financial contracts.

FIGURE 2. WHILE SOFR CAN BE VOLATILE, ITS 90-DAY AVERAGE IS LESS VOLATILE THAN 3-MONTH LIBOR

SOFR and 90-day average SOFR versus 3-month LIBOR



Source: Federal Reserve Bank of New York, Bloomberg. Data as of September 30, 2019.

Progress on Fallback Language

Fallback language is the legal provision in a contract that applies if the underlying reference rate in the product is discontinued or unavailable.[4] Since our last white paper, the ARRC has released final recommended fallback contract language for new issuances of cash securities such as FRN, syndicated loans, bilateral loans, securitizations and ARMs.

[4] See Figure 5 in Thomas A. Sontag & Stone Jiang, "Life After LIBOR" (January 2019), at https://www.nb.com/_layouts/www/transfer.aspx?URL=/insights/life-after-libor, for the standard language for calculating a reference rate in legacy cash securities contracts.

Even though details might differ for different kinds of securities, fallback language recommended by the ARRC generally comes in two kinds: the "hardwired approach" and the "amendment approach."

In the "hardwired approach" the three most important parts define:

- Benchmark Transition Events: Trigger events that define the circumstances under which LIBOR will be replaced
- Replacement Rate: The rate, or waterfall of rates (usually including term SOFR plus a spread adjustment, compounded SOFR plus a spread adjustment, or similar) that would replace LIBOR following a Benchmark Transition Event
- Spread Adjustment: The spread adjustment that is applied to the replacement rate to account for differences with LIBOR

While the "hardwired approach" clearly specifies the waterfall of replacement rates, the "amendment approach" allows flexibility for the agent and the borrower to negotiate a successor rate and a spread adjustment. The Required Lenders, typically a majority, then have a five-day window to turn down the proposed rate. The flexibility could help market participants capture future developments of the market that don't exist now.

The recommended fallback language for FRNs, securitizations and ARMs proposes a "hardwired approach" because, for such contracts, unanimous consensus from all debt holders is usually required to reach any decision. Loans, however, offer some flexibility and are amended or refinanced routinely during their life. As a result the ARRC's recommended language for loans includes both options.

Basis risk still exists, however. Collateralized loan obligations (CLO) and their underlying loans could potentially fall back to different reference rates at different times. For example, a pre-determined rate in the "hardwired approach" for CLOs, since CLOs are a type of securitization, might be different from a negotiated rate derived from the "amendment approach" for the underlying loans. Probably the best way to minimize the risk is for both CLOs and loans to adopt a "hardwired approach," so that the fallback provisions will be aligned.

On the derivatives' front, ISDA has been gathering views from market participants and has finally published results regarding methodologies for spread adjustments between LIBOR and replacement rates such as SOFR. The results showed that 61% of market participants preferred to calculate the spread using a historical median approach with a five-year look-back period. Due to the fact that spread adjustments could directly impact market pricing, some market participants regard their publication as a necessity before they adopt SOFR-linked securities. ISDA expects to finalize and incorporate these spread adjustments into both legacy and new contracts in 2020.

Progress at Neuberger Berman

At Neuberger Berman, we have been closely monitoring and actively preparing ourselves for the transition away from LIBOR from its earliest stages. We have formed a firm-wide steering committee that is comprised of senior executives of all impacted business areas to manage the LIBOR transition. Committee members meet regularly to present and discuss developments, and are leading the effort to identify, measure, monitor and control the risks related to their corresponding business areas. The committee has created a detailed task list (shown in figure 3), based on the ARRC's "Practical Implementation Checklist for SOFR Adoption," to define the relevant focus within each business area.

FIGURE 3. NEUBERGER BERMAN'S LIBOR TRANSITION TASK LIST

Business Area	Focus
Investment Strategy	Quantify and monitor LIBOR exposure of client portfolios, and identify investment opportunities arising from the transition
Client Impact & Communication	Develop and implement strategies to proactively engage, consistently communicate, and increase levels of education with impacted internal and external stakeholders
Risk	Assess the impact to existing valuation and risk models, and measure and monitor material market risks from the transition, e.g. market adoption, product and currency liquidity, etc.
Technology & Operations	Assess the impacts to operational models, processes and systems, and develop a process to incorporate new market data sources and related new calculation methodologies
Legal	Review fallback language of existing LIBOR-linked contracts, and assess the legal impact resulting from the transition for legacy contracts
Finance	Identify and understand impacts to financing, accounting standards and tax

Source: Neuberger Berman. For illustrative purposes only.

We continue to monitor and document our LIBOR exposure across all areas of the firm, and we have participated in the SOFR-linked market opportunistically. For newly issued bonds that reference LIBOR, we are checking all the prospectuses to make sure that the recommended fallback language is used in the contracts.

Additionally, we have been actively contributing to industry group discussions of different asset classes, engaging with external constituents to stay abreast of industry developments and best practices, and working with external software providers to ensure that all alternative reference rates are available within trading and risk platforms.

Looking Forward—Challenging But Promising

If LIBOR will be discontinued by the end of 2021, there are less than two years left to complete the transition.

Two major steps still need to be taken, according to the ARRC's Paced Transition Plan: 1) Central counterparties (CCP) will need to use SOFR as both the Price Alignment Interest rate (PAI) and the discount rate for all new swap contracts; and 2) A SOFR term structure will need to be created. For the former, both CME and LCH have proposed to migrate the discount and price alignment environment for cleared USD interest rate swaps from the Effective Fed Funds rate to SOFR on October 17, 2020. As for the creation of a SOFR term structure, more liquidity is needed in the SOFR futures and swaps markets, especially for certain tenors, as current sizes are only fractions of those of LIBOR-linked markets.

Even once these hurdles are cleared, however, it will be very difficult for all market participants with LIBOR exposure to overcome the operational challenges of the transition within two years.

Nonetheless, it is very encouraging to see a year of joint efforts from regulators and government agencies, as well as industry groups and market participants, working together to promote the widespread adoption of SOFR. Only a year ago, when we published our last white paper on LIBOR transition, the SOFR-linked markets barely existed. By the end of 2019, the notional amount outstanding in the SOFR-linked markets had reached more than $2 trillion.

There is still a lot to be accomplished, but with fewer and fewer market participants waiting and watching on the sidelines, and more preparation for and participation in SOFR-linked markets, the outlook for the transition never looked more promising.

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