Year-End Progress Report:
The Transition from U.S. Dollar LIBOR

The Alternative Reference Rates Committee

December 2021

Overview

This report provides a brief update on progress in the transition away from LIBOR ahead of the year-end deadline set by supervisors calling on banks to end new use of USD LIBOR, and the cessation of certain LIBOR panels after December 31, 2021. Overall, the Alternative Reference Rates Committee (ARRC) observes that considerable progress has been made in the transition away from LIBOR to the Secured Overnight Financing Rate (SOFR) in cash and derivatives markets since the last progress report. The ARRC believes that this progress will position markets well for the year ahead, and that this progress has established SOFR as the as the market's preferred rate as LIBOR activity winds down in derivatives, capital, and lending markets.

In its March 2021 Progress Report, the ARRC noted that the key elements of SOFR derivatives market infrastructure were in place and that growth in SOFR swaps outstanding had risen noticeably. However, the progress report also noted that LIBOR remained the dominant rate in both swaps and futures markets and that the share of SOFR derivatives was still a small percentage of LIBOR derivatives, either measured in trading volumes or outstanding amounts. In cash products, while the progress report noted that SOFR had become the most used reference rate in floating rate debt issuance and that Fannie Mae and Freddie Mac had recently moved to accepting only SOFR adjustable-rate mortgages (ARMs) in place of LIBOR, the report also pointed to slow progress in business loans and securitizations, which continued to be almost entirely based on LIBOR.

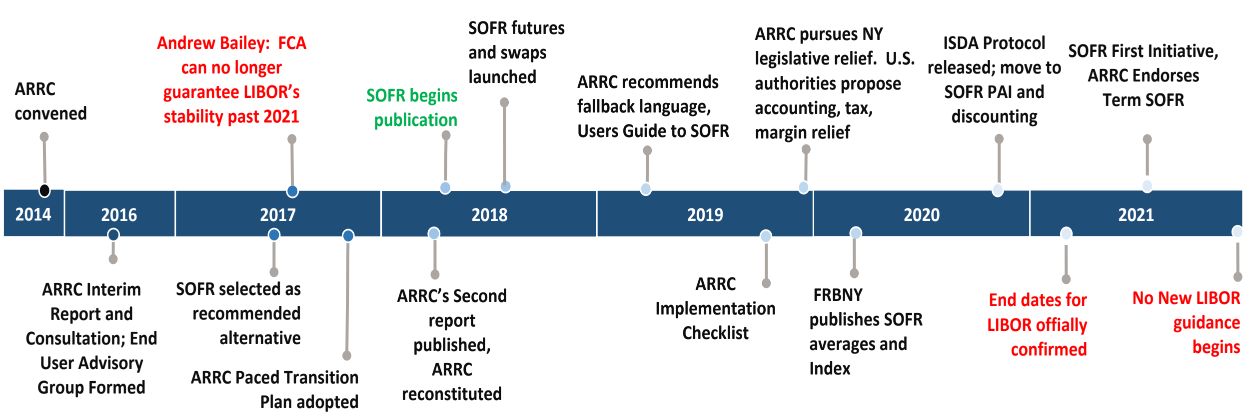
Since March, significant progress has been made in the transition of over-the-counter (OTC) derivatives markets to SOFR. Building on the "SOFR First" initiatives launched by the Commodity Futures Trading Commission's (CFTC) Market Risk Advisory Committee (MRAC) and supported by the ARRC, volume and liquidity in SOFR swaps has sharply increased, up 600 percent since the March report and climbing. Use of SOFR in debt and mortgage markets has further consolidated, with almost all Floating Rate Notes now referencing SOFR, and floating rate agency MBS now solely based on SOFR. In addition, the ARRC's mid-year recommendation of term SOFR has helped to jump start the transition in loans markets, where there are signs of positive momentum in SOFR-based business lending.

The transition has involved a massive undertaking by the ARRC and its public and private partners worldwide. The momentum now underway from USD LIBOR towards SOFR will put the global financial system on a more stable and enduring foundation, with a rate that is transparent, well-designed, and grounded in market transactions. The ARRC plans to continue to monitor the transition to SOFR closely in 2022, and stands ready to continue its work in support of a smooth transition away from LIBOR.

The ARRC's Support for the LIBOR Transition

Since the ARRC was first convened by the Federal Reserve Board and the Federal Reserve Bank of New York in 2014, with the support and active involvement of all of the ARRC's ex-officio members, it has worked to build an infrastructure that would enable market participants to move from LIBOR to a more robust reference rate. The ARRC's initial work was spent identifying an alternative to USD LIBOR. As part of that process, ARRC members reviewed existing interest rate benchmarks and collected data on each of the potential markets that a prospective benchmark could be based upon. This culminated in its Interim Report and Consultation in 2016, which explained why existing term markets were not robust enough to support a LIBOR alternative and set out two leading candidates based on unsecured and secured overnight markets. As part of its consultation, the ARRC also formed an advisory group to collect views from a diverse set of key end users representing a variety of perspectives. Following its consultations, the ARRC selected SOFR as its recommended replacement, documenting its process and the reasons for its choice in its Second Report. The Federal Reserve Bank of New York, in cooperation with the Office of Financial Research, subsequently began publishing SOFR in April 2018.

Figure 1: The ARRC's Work and the LIBOR Transition



Since the selection of SOFR, the ARRC has focused on encouraging the development of SOFR derivatives and cash markets and on addressing the problems in contractual fallback language used in LIBOR products. The ARRC first published its User's Guide to SOFR in 2019, which set out a range of ways in which SOFR could be used in cash products, along with conventions for floating rate notes (FRNs) and adjustable rate mortgages (ARMs), and it published further conventions for business loans, student loans, intercompany loans, and securitizations over 2020 and 2021. To address the weaknesses in many contractual fallbacks, the ARRC published detailed fallback language for new issuance of cash products that continue to reference LIBOR. Each of these recommendations was based on public consultation and reflected widespread support from respondents. The ARRC has subsequently pursued legislative solutions for legacy contracts that do not have workable fallbacks and cannot otherwise be easily amended, seeking to promote consistent outcomes for these products.

The ARRC has continued its work to promote a smooth transition over the course of this year. The states of New York and Alabama have each passed legislative solutions based on the ARRC's proposals, and the U.S. House of Representatives has also recently passed a similar legislative proposal. The ARRC has worked with the Commodity Futures Trading Commission's (CFTC) Market Risk Advisory Committee (MRAC) in supporting its "SOFR First" initiative encouraging faster adoption of SOFR in interdealer markets. And the ARRC has endorsed 1-, 3-, and 6-month term SOFR rates produced by CME Group for use as a fallback rate for legacy LIBOR cash products, for new business loans that otherwise would have difficulty moving to other forms of SOFR, and for derivatives and securitizations tied to these products.

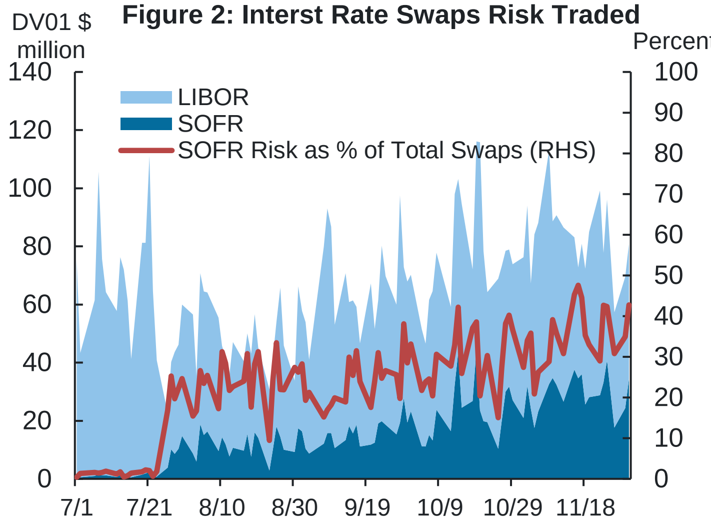
Transition Progress at Year End

Derivatives

Progress in OTC derivatives markets has accelerated sharply over the second half of the year, beginning with the CFTC's MRAC Subcommittee's "SOFR First" initiative, which recommended that interdealer trading conventions move from LIBOR to SOFR in several stages.

Since the first stage of the SOFR First initiative, which recommended that interdealer trading conventions for linear swaps move to SOFR as of July 26. the share of SOFR in interdealer swaps trading has increased to 80-100 percent. As shown in Figure 2, the share of SOFR in *overall* interest-rate swaps trading volumes has increased appreciably as a result, to roughly 40 percent of volumes measured on a risk-adjusted basis.

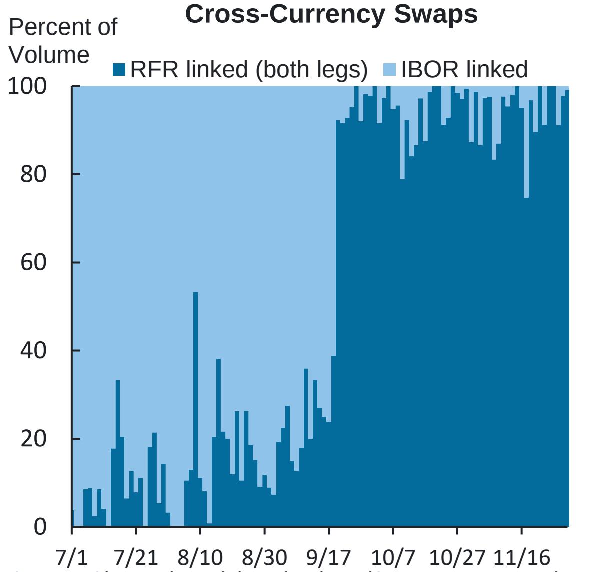
Figure 2: Interst Rate Swaps Risk Traded



Source: Clarus Financial Technology (Swap Execution Facility data)

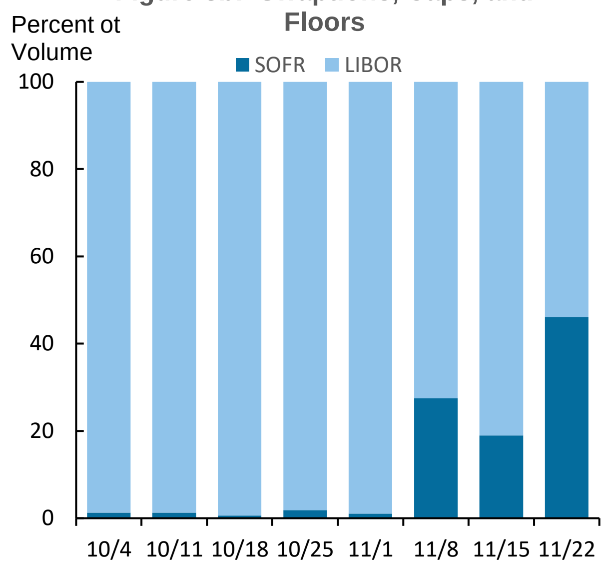
The second stage, which recommended that cross-currency basis swaps between U.S dollar, sterling, Swiss franc, and Japanese yen move to SOFR, SONIA, SARON, and TONA, was similarly successful. As shown in Figure 3a, most trading in basis swaps between these currencies is now based on riskfree rates. The third phase, which recommended that interdealer trading conventions for swaptions and caps and floors move to SOFR, began on November 8, and there has similarly been a clear pickup in the share of market activity based on SOFR in these instruments (Figure 3b).

Figure 3a: GBPUSD, USDCHF, and USDJPY Cross-Currency Swaps



Source: Clarus Financial Technology (Swaps Data Repository data)

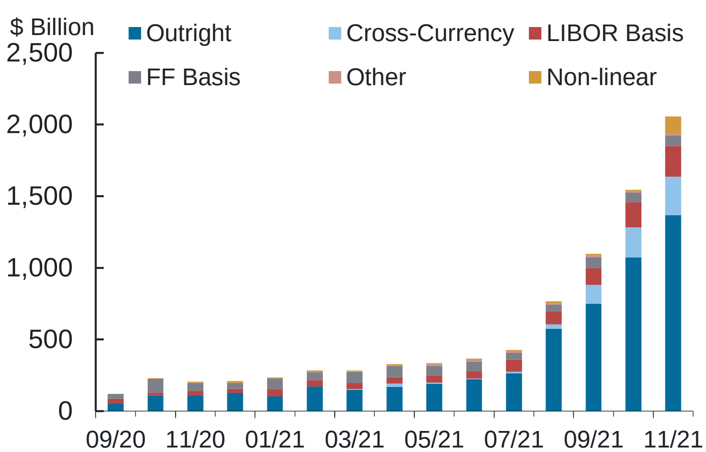
Figure 3b: Swaptions, Caps, and Floors



Source: Clarus Financial Technology (Swaps Data Repository data)

Together, these initiatives have led to a sharp acceleration in trading across the full range of SOFR OTC derivatives (Figure 4). Trading volumes have risen over 600 percent since the March Progress Report and grew more than 80 percent during November alone. As a result, the volume of SOFR swaps outstanding has tripled.

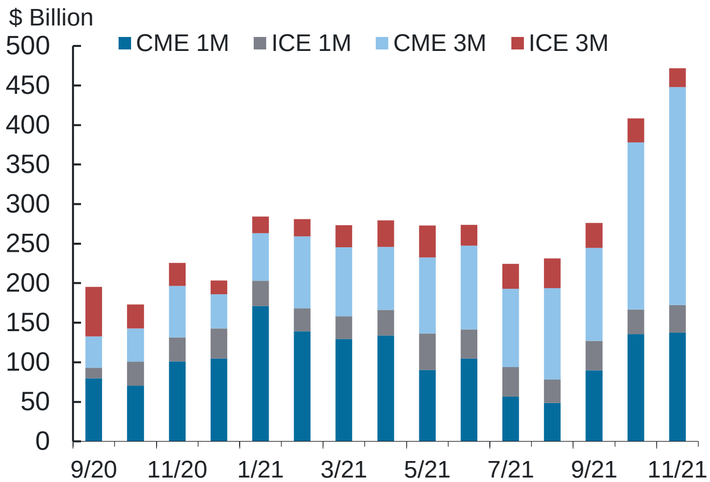
Figure 4: Monthly SOFR Swap Volumes



Source: Bloomberg (Swap Data Repository data)

This acceleration of activity in OTC markets and the impending year-end deadline have also spilled over into futures markets, where there has been a clear pickup in activity over the past two months. As of November, monthly SOFR futures volumes have increased 70 percent from the level of activity in March 2021 (Figure 5).

Figure 5: Average Daily Notional SOFR Futures Volumes

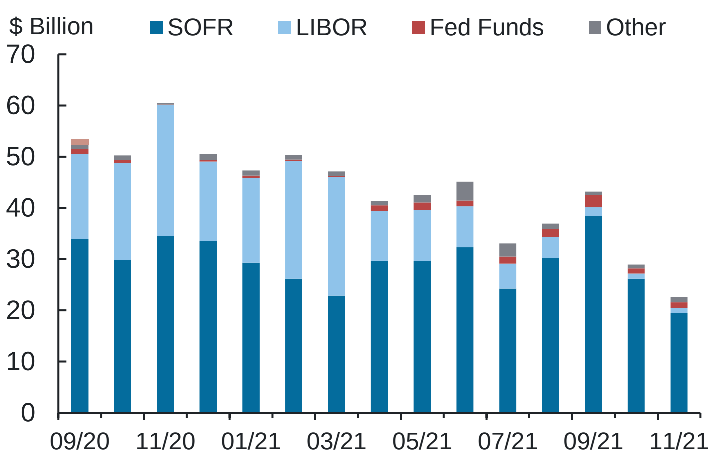


Source: Bloomberg

Capital Markets

At the time of the March Progress Report, the majority of floating rate debt issuance had already begun to reference SOFR, and this progress has further consolidated in recent months so that SOFR now clearly accounts for almost all private issuance (Figure 6).

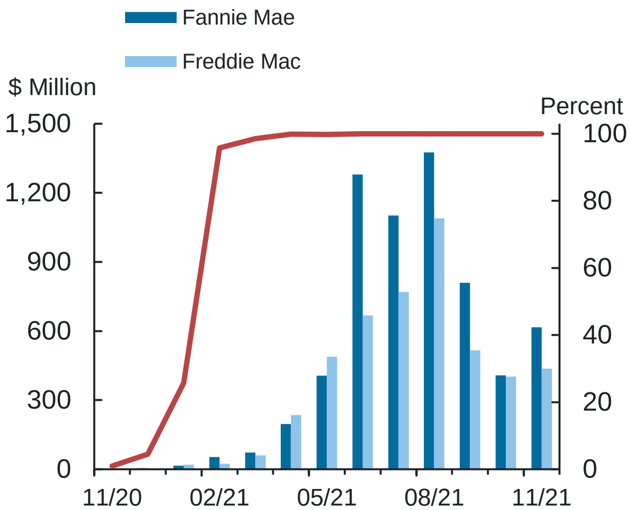
Figure 6: FRN Issuance by Reference Rate



Source: Bloomberg
Note: Excludes issuance by U.S. Treasury.

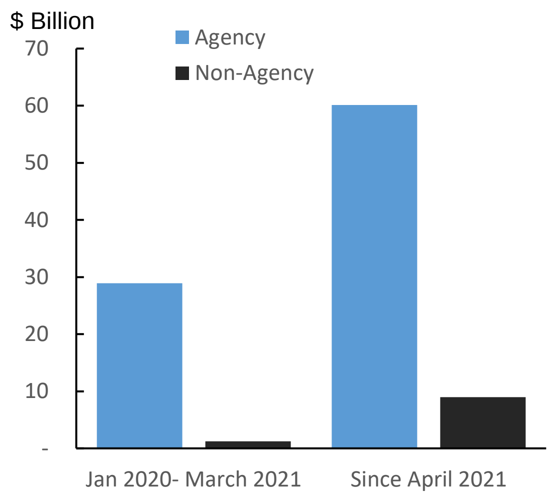
Progress has also continued in securitizations related to consumer products, where the GSEs have taken a strong leadership role. Fannie Mae and Freddie Mac stopped accepting single- and multi-family LIBOR ARMs as of this year and now only accept SOFR ARMs. The volume of GSE SOFR linked MBS issuance has grown noticeably since March as a result (Figure 7a), now totaling roughly $90 billion in total (Figure 7b). Non-agency securitization markets have been slower to develop, as noted in the March Progress Report, but there has been some recent increase in issuance as more lending has moved to SOFR.

Figure 7a: SOFR-indexed ARM Agency MBS



Source: Black Knight-eMBS

Figure 7b: SOFR Securitization Issuance



Business Lending

Although a few banks had begun to offer SOFR-based bilateral business loans and were already in the process of moving their new business away from LIBOR at the time of the March Progress Report, most U.S. banks were continuing to offer LIBOR as their primary or sole floating-rate business loan option and the Progress Report noted that lenders were not communicating with borrowers about LIBOR alternatives. Several associations representing nonfinancial corporate borrowers subsequently issued a letter to the heads of the Federal Reserve Board, U.S. Treasury Department, Securities and Exchange Commission, Commodity and Futures Trading Commission, and the Federal Reserve Bank of New York noting their concerns about the pace of the transition and preference for SOFR-based borrowing options, and the agencies replied seconding these concerns.

Although LIBOR lending has continued to predominate for most of this year, the ARRC's endorsement of 1-, 3-, and 6-month term SOFR rates produced by CME Group in July has shifted this dynamic as a number of banks quickly moved to offer term SOFR lending products. As recommended by the ARRC, many banks have also moved to an exception policy for new LIBOR lending over Q4. As a result, although progress has been slow, there has nonetheless been a shift in momentum toward SOFR lending since October (Table 1).

Table 1: Syndicated Lending Based on SOFR

	Leveraged			Investment-Grade		
	Number	Amount ($ Billions)	SOFR lending as a percent of LIBOR lending	Number	Amount ($ Billions)	SOFR lending as a percent of LIBOR lending
October	5	$4.3	6%	6	$17.9	38%
November	16	$12.9	17%	7	$30.9	53%

Source: LCD Leveraged Commentary & Data, and Refinitiv LPC

Not all of this lending has been based on the SOFR term rates. Many banks are now offering SOFR loan products based on both SOFR averages and SOFR in arrears in addition to term SOFR loans, consistent with the desire expressed by many nonfinancial corporate borrowers to have a choice across a range of SOFR borrowing options. Notably, Ford negotiated a $15 billion SOFR revolving credit facility in September based on daily simple SOFR in arrears.

Looking Forward

As part of its monitoring of the transition, the ARRC has surveyed its members on their views of the transition. Most respondents believe that the transition is generally advancing smoothly given the progress that has been made. The SOFR First initiative has established SOFR as the clear successor to LIBOR in derivatives markets. Recognizing that the share of SOFR in overall swaps volumes should increase markedly after the end of the year, the progress to date should position both dealers and their customers well to use SOFR swaps and other SOFR derivatives rather than LIBOR in 2022. Likewise the inroads that have already been made in using SOFR in capital and lending markets should facilitate the move away from new LIBOR use next year.

Looking ahead, ARRC members have identified a few key issues where further work will be required in 2022:

- The ARRC believes that LIBOR-based futures activity, including Eurodollar futures and options, will shift over time as OTC derivatives and cash markets continue to move to SOFR, but that further progress may be needed to accelerate the transition next year given the large role that non-banks play in these markets. Given their economic significance for hedging and other activity, it is important to ensure a smooth transition away from LIBOR-based futures markets and avoid a situation where futures liquidity becomes "stranded" on LIBOR while the rest of economic activity has transitioned to SOFR. Market participants should be aware of and plan for the potential risk that liquidity in LIBOR markets could decline after the year-end supervisory deadline. The earlier progress in establishing SOFR futures over 2018-19 has already led to a robust level of market depth in SOFR based futures, making them a liquid and growing alternative to LIBOR derivatives. The ARRC continues to recommend that all market participants cease entering into new LIBOR contracts, including LIBOR futures and options, in line with the year-end 2021 supervisory deadline, and fully endorses the recommendation of the MRAC Subcommittee that all markets participants replace use of LIBOR with SOFR for new contracts, including exchange-traded derivatives, after end-2021.

- Several different forms of SOFR now appear to have been widely used in syndicated lending; in contrast, there has been very little syndicated lending based on credit sensitive rates. Although most banks appear to be moving rapidly over the last months of 2021 to wind down LIBOR and there has been a subsequent pickup in use of SOFR as a replacement, many existing legacy LIBOR loans will not mature until after 2021, and consequently many borrowers and lenders may not adopt their first SOFR loan until next year. Borrowers have noted that more information could be made available about the pricing of SOFR loans and it appears that smaller borrowers may be being offered fewer borrowing options than larger borrowers. Thus, it will be important that market conventions for SOFR loans are further developed next year.

- ARRC members believe that market conventions will also need to be further developed in securitization markets. The successful issuances led by the GSEs will help others as they move to issue in SOFR. As more loans move to SOFR, it is likely that securitization markets should likewise transition in the coming months.

- Finally, ARRC members will continue its work to facilitate a smooth transition as the market evolves and will work to prepare markets for the end of U.S. dollar LIBOR in 2023. The ARRC's Operations and Infrastructure working group will continue its work to ensure that market participants are operationally ready for 2023. In addition, the ARRC will continue to seek to build on the legislative progress that has already been made in the states of New York and Alabama. The recent passage of similar legislation by the House of Representatives marks an important step in helping to ensure that legacy contracts in all 50 states are protected. The ARRC will advocate for passage of similar legislation by the Senate, and will also advocate for legislative solutions in other states as is needed in case federal legislation does not pass in time.