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CALIFORNIA DEBT AND INVESTMENT ADVISORY COMMISSION

PREPARING FOR THE END OF LIBOR: A LOOK AT LIBOR AND THE USD LIBOR ALTERNATIVE

INTRODUCTION

On July 27, 2017, the Financial Conduct Authority (FCA), regulator of the financial sector in the United Kingdom, announced that by the end of 2021 the London Interbank Offered Rate (LIBOR) would be discontinued.[1, 2] Although LIBOR has become a key benchmark for setting interest rates in financial markets, the process supporting LIBOR rate determination has become less sustainable and less reliable in recent years. With its expiration set, banks and other market participants, including public agencies that are actively referencing LIBOR must begin the transition to alternative reference rates whether currently existing or yet-to-be created. In the United States (U.S.), the Alternative Reference Rates Committee (ARRC) recently established the Secured Overnight Financing Rate (SOFR) as the alternate reference rate to US Dollar (USD) LIBOR.

Public agencies with municipal debt instruments and derivatives linked to LIBOR should consider the potential effects of the transition from LIBOR on their portfolios. This report discusses LIBOR, the market issues leading to its approaching termination, and identifies alternative reference rates including SOFR.

WHAT IS LIBOR?

First published in 1986, LIBOR represents the average rate at which a leading bank can obtain unsecured funding in the London interbank market.[3] This rate is used globally as the standard benchmark from which to price or set interest rates on a variety of financial contracts including derivatives, bonds, loans, and other consumer lending products (mortgages, credit cards, and student loans).[4, 5] It is estimated that over $350 trillion in financial products currently reference LIBOR. In the municipal market, LIBOR is often used when setting the interest rates on floating rate notes (FRNs) and interest rate swap agreements, bank letters of credit (LOCs) and standby bond purchase agreements (SBPAs), as well as a reference rate in various reinvestment products including debt service reserve funds, construction fund investments and debt service deposit agreements. LIBOR rates are widely quoted in several different currencies, including the USD, and for a range of maturities from 1 day to 1 year. Currently, LIBOR is set by a panel composed of various large banks around the world who submit to the ICE Benchmark Administration (IBA) an estimate of the interest rate at which they could borrow funds at just before 11 AM (London Time).[6] Once published, the highest and lowest 25% of the submitted rates are excluded and the median of the remaining 50% of the rates is used to calculate LIBOR's reference rate for that

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[1] Andrew Bailey, "The future of LIBOR." (Speech, Bloomberg's Headquarters in London, UK, July 27, 2017). https://www.fca.org.uk/news/speeches/the-future-of-libor

[2] GFOA April 2018 Washington, DC, Update, GFOA Helps Educate Issuer Community as LIBOR Transition Approaches, http://www.gfoa.org/april-2018-washington-dc-update

[3] "LIBOR," Municipal Securities Rulemaking Board, Glossary of Municipal Securities Terms, http://www.msrb.org/Glossary/Definition/LIBOR.aspx, (last visited June 13, 2018).

[4] Municipal Securities Rulemaking Board, *Libor and the Municipal Market*, September 2012, p. 1.

[5] "Reforming Major Interest Rate Benchmarks," Financial Stability Board, July 22, 2014. http://www.financialstabililtyboard.org./publications/r_140722.pdf

[6] Intercontinental Exchange (ICE).

day's maturities.[7] The panel for the USD LIBOR consists of 18 banks.

CONCERNS WITH LIBOR

The primary concern for LIBOR is that it is becoming unsustainable and unreliable. LIBOR is meant to represent the cost of short-term unsecured interbank borrowing; however, banks have substantially reduced this type of borrowing, relying instead upon secured borrowing, and for certain maturities, there is little to no interbank borrowing activity. Participating banks are reporting rates based on their expert judgement or informed guesses rather than based on actual market transactions. The relatively small number of transactions underpinning LIBOR has been attributed to changing market structure, capital and liquidity regulations, and changes in bank risk appetite for short-term funding.[8] These factors are unlikely to change.[9] Some banks have grown uncomfortable in providing submissions based on expert judgements and since 2016, two banks have stopped submitting to USD LIBOR.[10]

The discovery of LIBOR manipulation during the financial crisis highlighted a weakness of the LIBOR structure. In 2012, an investigation found that as early as 2003 and during the financial crisis, banks had manipulated LIBOR for profit. While regulations developed as result of the scandal have made LIBOR reporting more accountable, its structure is still often based on educated estimates rather than data from a robust underlying market.

ALTERNATIVE REFERENCE RATES

In 2014, several years before the announcement of LIBOR's expiration date, the Federal Reserve Board and Federal Reserve Bank of New York convened the ARRC to consider alternate reference rates to the USD LIBOR.[11] The charge of the ARRC was to identify a set of alternative reference interest rates that are more firmly based on transaction data and that comply with emerging financial standards.[12]

In June 2017, ARRC identified three alternative reference rates based on overnight repurchase agreement (repo) transactions backed by Treasury securities:[13]

1. Tri-party General Collateral Rate (TGCR): a measure of rates on overnight, specific-counterparty tri-party general collateral repurchase agreement (repo) transactions secured by Treasury securities.[14, 15]
2. Broad General Collateral Rate (BGCR): a measure of rates on overnight Treasury general collateral repurchase agreement (repo) transactions. General collateral repo transactions are those for which the specific securities provided as collateral are not identified until after other terms of the trade are agreed. The BGCR includes all trades in the TGCR plus general collateral repo transactions.[16]
3. Secured Overnight Financing Rate (SOFR): a broad measure of the cost of overnight cash borrowing collateralized by Treasury securities. The SOFR includes all trades in the BGCR plus bilateral Treasury repurchase agreement (repo)

[7] In 2014, LIBOR was handed over from the British Banker's Association (BBA) to Intercontinental Exchange (ICE) as part of the LIBOR reformation and improvement process after evidence was discovered that LIBOR was found to be manipulated. Today, LIBOR is also known as ICE LIBOR. See: https://www.theice.com/iba/libor#reports

[8] Alternative Reference Rates Committee, Frequently Asked Questions, September 20, 2018, p. 2. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Sept-20-2018-announcement.pdf

[9] Alternative Reference Rates Committee, Frequently Asked Questions, September 20, 2018, p. 2. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Sept-20-2018-announcement.pdf

[10] Alternative Reference Rates Committee, Frequently Asked Questions, September 20, 2018, p. 2. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Sept-20-2018-announcement.pdf

[11] Alternative Reference Rate Committee (ARRC), "ARRC Releases Second Report on Transition from LIBOR." ARRC Publications. March 2018. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-second-report-press-release

[12] Alternative Reference Rates Committee, Frequently Asked Questions, September 20, 2018, p. 1. https://www.newyorkfed.org/medialibrary/Microsites/arrc/files/2018/ARRC-Sept-20-2018-announcement.pdf

[13] ARRC Second Report, p. 6.

[14] Federal Reserve Bank of New York, Tri-Party General Collateral Rate Data, https://apps.newyorkfed.org/markets/autorates/tgcr

[15] General collateral repo transactions are those for which the specific securities provided as collateral are not identified until after other terms of the trade are agreed.

[16] Federal Reserve Bank of New York, Broad General Collateral Rate Data, https://apps.newyorkfed.org/markets/autorates/bgcr

transactions cleared through the Delivery-versus-Payment (DVP) service offered by the Fixed Income Clearing Corporation (FICC), which is filtered to remove a portion of the transactions which deviate from the mean considered "specials".[17]

Each of these rates were measured by ARRC against a set of criteria such as consistency with International Organization of Securities Commissions (IOSCO) *Principles of Financial Benchmarks* and depth of market activity.[18] In brief, all three alternatives will be known together as the *Treasury repo rates* with their transactional data tracked directly from the different sectors of the repo market.[19] The rates are administered by the Federal Reserve Bank of New York (FRBNY) and are published at 8 AM (Eastern Time) every business day. The first publication date of the Treasury repo rates was April 3, 2018.

USD LIBOR ALTERNATIVE: SECURED OVERNIGHT FINANCING RATE (SOFR)

SOFR was selected as the preferred replacement for the USD LIBOR index for USD derivatives and other financial contracts.[20] ARRC decided to use SOFR to replace USD LIBOR due to its robust overnight transaction volume. As described above, SOFR encompasses the trades of the other two repo rates (TGCR and BGCR) providing the broadest measure of the general cost of financing Treasury securities overnight. Each of the Treasury repo rates are all calculated using the same *volume-weighted median* methodology. The volume-weighted median is calculated ordering the transactional data from the least to highest rate, taking the cumulative sum of volumes of these transactions and identifying the rate associated with the trades at the 50th percentile of dollar volume.[21] Currently, SOFR's volume reflects $800 billion in daily activity.

The prominent differences between SOFR and LIBOR are based on security and term. SOFR is based on U.S. Treasury repo transactions which are secured, while LIBOR is an unsecured purported rate. Currently, SOFR is an overnight rate while LIBOR covers terms ranging from overnight to 1 year. As a result, SOFR rates are typically lower than 1 Month and 3 Month LIBOR, the most common LIBOR indices referenced in financial transactions.

Market activity using SOFR is expanding. SOFR futures started trading on May 7th, 2018, by the Chicago Mercantile Exchange (CME) Group Inc.[22] In July 2018, Fannie Mae issued $6 billion of bonds linked to SOFR and the World Bank issued $1 billion in SOFR linked swaps. The New York Metropolitan Transportation Authority's September 2018 bond issue totaling approximately $107 million in one-year floating rate notes was the first municipal market SOFR deal.[23] Because of strong interest in the deal, the Authority increased its new money issuance.

POSSIBLE IMPACTS ON PUBLIC AGENCIES

As the markets begin transitioning from LIBOR, California public agencies must be proactive when considering their options to move away from LIBOR. To begin, they must review their debt portfolio and other financial contracts (bonded debt, derivatives, investment agreements or lines of credit) to identify any agreements tied to LIBOR. For those obligations which extend past

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[17] Federal Reserve Bank of New York, Secured Overnight Financing Rate Data https://apps.newyorkfed.org/markets/autorates/sofr

[18] See *"Table 2: ARRC Criteria for Potential Alternative Reference Rates"* on AARC's "Second Report of the Alternative Reference Rates Committee."

[19] Board of Governors of the Federal Reserve System. *Request for Information Relating to Production of Rates*, Vol. 82. Fed. Reg. 41,259. Washington DC, Aug 2017. https://www.gpo.gov/fdsys/pkg/FR-2017-08-30/pdf/2017-18402.pdf

[20] Board of Governors of the Federal Reserve System. *Production Rates Based on Data for Repurchase Agreements*, Vol. 82. Fed. Reg. 58,397. Washington DC, Dec 2017. https://www.gpo.gov/fdsys/pkg/FR-2017-12-12/pdf/2017-26761.pdf

[21] Federal Reserve Bank of New York, *Additional Information about the Treasury Repo Reference Rates*, www.newyorkfed.org/markets/treasury-repo-reference-rates-information

[22] CME Group. 2018. "CME Group Announces First Trades of New SOFR Futures." https://www.cmegroup.com/media-room/press-releases/2018/5/08/cme_group_announcesfirsttradesofnewsofrfutures.html

[23] After its initial issuance, the Authority completed a $125 million follow-on SOFR transaction.

2021, agencies need to determine if the existing agreement contains fallback language that identifies an index that would be used in lieu of LIBOR or if the agreement needs to be amended to include a different rate. While many legacy agreements include LIBOR fallback language, this language was intended for use in the event of a temporary market dislocation which caused LIBOR not to be published for a brief period of time rather than being phased-out completely. The agency needs to determine whether existing language provides coverage in the event of a permanent elimination of the LIBOR index. If not, then the public agency should begin negotiations with the provider to amend the language based upon the current plans for a permanent phase-out.

With SOFR as the designated USD LIBOR alternative, public agencies should become familiar with the SOFR rate and how it differs from LIBOR. For new financing agreements that extend past 2021, public agencies should ask the financing team about including a mutually agreeable fallback rate. Since SOFR is a daily rate, public agencies may consider implementing procedures to track SOFR on a daily basis as well as monitor the effect on the agency's current portfolio if SOFR were the adopted benchmark rate.

For public agencies with fixed payer interest rate swaps that extend beyond 2021, particular attention should be paid to the economic impact of the conversion to SOFR, any tax or reissuance implications as well as any accounting impacts. Any basis risk analysis that was performed using LIBOR as the floating rate receipt on the swap(s) should be repeated using the SOFR index (data exists back to 2014). In addition, possible disruptions and increased risk of basis shift should be carefully considered. Again, public agencies should contact their legal teams and financial advisors to begin this analysis.

CONCLUSION

With LIBOR set to expire at the end of 2021, public agencies need to assess their portfolios to identify their current exposure to LIBOR. Public agencies need to develop a plan to transition from LIBOR to an alternate reference rate, such as SOFR. With the new reference rate, public agencies need to understand the differences between SOFR and other alternate reference rates and LIBOR and the potential impact on their portfolio. Public agencies should remain up-to-date on the latest information on the transition away from LIBOR in order to minimize any potential risk to their current portfolio as well as considerations for future issuance or hedging.

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