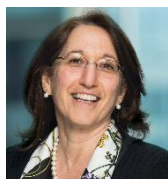


LIBOR: The Next Chapter



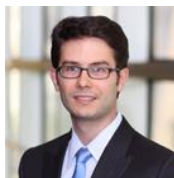
Barbara Novick
Vice Chairman



Jack Hattem
Deputy CIO,
BlackRock Obsidian
Fund



Alexis Rosenblum
Global Public
Policy Group



Alex Krol
Head of Derivatives
Alpha, Global Fixed
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Rob Mitchelson
EMEA Head of
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“Panel bank support for current LIBOR until end-2021 will enable a transition that can be planned and can be executed smoothly. The planning and the transition must now begin.”

*—Andrew Bailey, Chief Executive,
UK Financial Conduct Authority (FCA), July 27, 2017*

The future of LIBOR may be in doubt post-2021. When we last wrote about LIBOR, the focus was on reforming the rate.¹ Today, attention has shifted to identifying LIBOR alternatives. The catalyst for this change was a July 2017 speech by Andrew Bailey, Chief Executive of the UK FCA, indicating that submitting to LIBOR will no longer be required of panel banks after 2021.² While this does not mean that LIBOR will disappear in 2022 (or ever), market participants must carefully consider the implications of benchmark reform for their portfolios.

Planning for the future begins with awareness. **But awareness alone is not a plan.** The market has yet to develop a comprehensive transition plan for the trillions of dollars of outstanding LIBOR-related transactions that will not mature before 2022. These exposures expand far beyond derivatives markets, as LIBOR is a prevalent reference rate embedded in many types of floating rate instruments, including mortgages and loans. With the identification of alternative reference rates (ARRs) mostly behind us, investors and regulators must now turn their attention to addressing legacy positions in a coordinated manner across asset classes and currencies.

Key Points

- The future of LIBOR is not guaranteed after the end of 2021.
- Raising awareness and identifying alternative rates are crucial first steps, but a comprehensive transition plan has yet to be developed. Global coordination across currencies and asset classes is critical.
- Our principal concern is the management of existing positions that reference LIBOR. In USD LIBOR alone, at least \$36 trillion in outstanding notional will not mature prior to 2022 (Source: Federal Reserve Bank of New York).³
- The ARR identified are not direct substitutes for LIBOR. The differences need to be considered as market participants decide whether to adopt them.
- The market will ultimately determine the pace of ARR adoption based on liquidity and the compatibility of ARR with various asset classes.
- Financial transactions do not exist in isolation. The relationships between assets in a portfolio must be handled with care to avoid disruption.
- Greater education of end-users is needed. This is integral to broader awareness and market readiness.

Benchmark reform affects our clients in different ways. This *ViewPoint*, therefore, raises broad investor considerations, rather than provide an analysis of individual asset classes.

Background

LIBOR, the London Interbank Offered Rate, is a widely used interest rate benchmark. LIBOR represents the cost of unsecured funding for banks in the interbank market. LIBOR is a survey-based rate benchmark calculated by asking a standing panel of banks to respond to the question: “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 11am London time?” LIBOR is published in 5 currencies across 7 tenors (Exhibit 1).

LIBOR is embedded in hundreds of trillions of dollars of floating rate instruments (Source: BIS).⁴ LIBOR forms the foundation of the interest rate swaps and Eurodollar futures market.⁵ These instruments are some of the most liquid and widely used tools for the management of interest rate risk globally. In addition, there are trillions in floating rate loans to companies and consumers that reference LIBOR (i.e., student loans, credit cards, bank loans, floating rate notes, floating rate commercial paper, municipal contracts, mortgages). As such, the uncertain future of LIBOR impacts not just banks and financial institutions but also corporations, municipalities, and individuals.

While the majority of existing exposures to LIBOR will mature prior to 2022, the amount of longer-dated positions is sizeable in absolute terms. In USD LIBOR alone, the Federal Reserve Bank of New York (NYFRB) estimates that \$36 trillion in notional outstanding will not mature before 2022 (Exhibit 2).⁶ The vast majority of this exposure is in interest rate derivatives. However, long-dated positions in other asset classes are still quite large. For example, the NYFRB estimates over \$900 billion in outstanding securitizations and over \$1 trillion in consumer and business loans in which LIBOR is embedded will not mature before 2022 (Exhibit 3).

Exhibit 1: LIBOR Rates

	USD	GBP	EUR	CHF	JPY
Overnight / Spot Next	1.70	0.48	-0.44	-0.78	-0.04
1 Week	1.74	0.49	-0.42	-0.81	-0.04
1 Month	1.89	0.51	-0.41	-0.79	-0.05
2 Month	2.00	0.59	-0.39	-0.75	-0.04
3 Month	2.31	0.69	-0.37	-0.74	-0.03
6 Month	2.44	0.82	-0.33	-0.65	0.01
1 Year	2.66	1.00	-0.25	-0.52	0.11

As of March 28, 2018. Source: ICE Benchmark Administration. <https://www.theice.com/marketdata/reports/170>.

Recent LIBOR Reforms

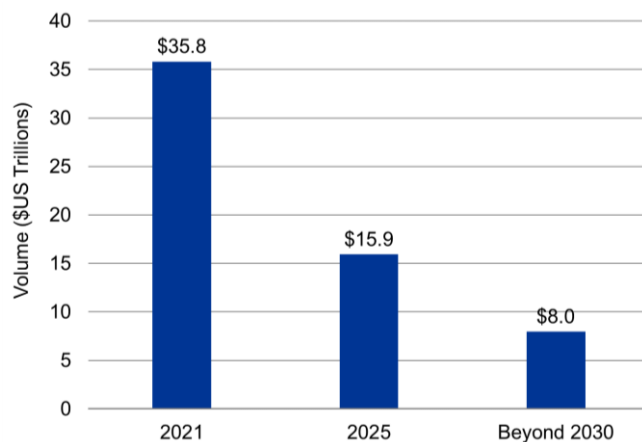
Concerns about wrongdoing related to LIBOR cast doubt on the credibility of the rate-setting process and led to calls for reform. In 2012, the UK Chancellor of the Exchequer commissioned Martin Wheatley, Chief Executive of the FCA (at the time), to conduct a review of LIBOR. Wheatley’s resulting report argued for reforming rather than replacing LIBOR. The report made several recommendations including calling for the British Bankers’ Association (BBA) – the body that had published LIBOR since 1986 – to transition responsibility for the rate-setting process to a new administrator.⁷ After a tendering process by an independent commission, ICE Benchmark Administration assumed responsibility for LIBOR in 2014.⁸ In addition, the FCA now regulates and oversees the LIBOR rate-setting process.

Alongside the work of the FCA, official sector bodies, like the International Organization of Securities Commissions (IOSCO) and the Financial Stability Board (FSB) reviewed financial benchmarks. In 2013, IOSCO issued *Principles for Financial Benchmarks* (IOSCO Principles), which laid out standards for the development of sustainable and credible benchmarks. The IOSCO Principles are comprehensive and not limited to interest rate benchmarks, covering all forms of financial benchmark, including market indices.⁹ Included within the IOSCO Principles are standards for the governance of interest rate benchmarks as well as a call for the grounding of submissions in transactional data to limit subjectivity.

Subsequently, the FSB formed the Official Sector Steering Group (OSSG) to consider the application of the IOSCO Principles to LIBOR and its global equivalents. In February 2014, the OSSG issued a report that recommended reforms for major interest rate benchmarks.¹⁰

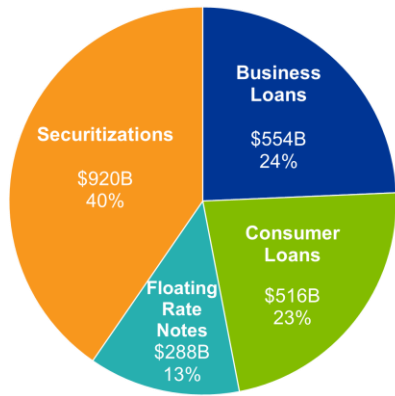
Exhibit 2: USD LIBOR-Related Notional Outstanding 2021 and Beyond

\$US Trillions



As of 2016. Source: BlackRock calculations, NYFRB, Second Report of The Alternative Reference Rates Committee, March 2018.

Exhibit 3: Breakdown of USD LIBOR Notional Outstanding Not Maturing by 2022 (ex Derivs.)



As of 2016. Source: BlackRock calculations, NYFRB, Second Report of The Alternative Reference Rates Committee, March 2018.

Efforts then turned to implementing the recommendations. ICE Benchmark Administration has since implemented numerous reforms to USD LIBOR including improvements to governance and oversight of the rate-setting process. It has also attempted to incorporate more transactional data.¹¹ Exhibit 4 provides a timeline of key milestones in reform efforts related to LIBOR between 2012 and 2017.

Unfortunately, however, ensuring that LIBOR is underpinned by robust transactional data has proven difficult due to a decrease in transactional volume in the unsecured interbank market. This decline in volume is largely attributed to changes in the funding models of banks tied to regulatory reforms. The lack of transactional volume means that more subjective judgment than would be preferable is involved in the rate-setting process. As a result, banks may be uncomfortable with continued participation on LIBOR panels.

That said, many market participants have asked whether LIBOR could continue to exist beyond 2021. The FCA has indicated that there would be no reason why ICE Benchmark

Administration could not continue to calculate and publish LIBOR beyond the end of 2021. Yet, the FCA has also stated that they believe some panel banks would have already ceased participation in LIBOR if the FCA had not obtained agreement from panel banks for continued participation until the end of 2021. As such, regulators globally have signaled that market participants should identify alternative rates and consider transitioning away from reliance on LIBOR.

Although a transition away from LIBOR appears to be the preference of the official sector, most market participants have indicated they would prefer LIBOR, in some form, to remain in place. An October 2017 Bank of America survey of 164 financial institutions found that 80% of respondents believed LIBOR should continue as a published reference rate. The majority of respondents believe that liquidity in the ARRs suggested by the official sector will be insufficient to support the discontinuation of LIBOR in 2021, though, respondents did expect to decrease usage of LIBOR-based swaps over time. While the preference for a continuation of LIBOR seems clear, important questions remain as to whether LIBOR will be a viable benchmark indefinitely.¹²

To this end, it is important that market participants carefully plan for the potential that LIBOR may no longer serve as a robust reference rate at some point in the future. 2022 may seem far off, but the time to plan is now.

“ My best guess is that some panel banks would already have departed [LIBOR] were it not for the voluntary agreement to stay in until the end of 2021 that we were able to obtain. ”

– Andrew Bailey, Chief Executive, Financial Conduct Authority, March 1, 2018¹³

Exhibit 4: Milestones in LIBOR-Related Benchmark Reform Efforts (2012-2017)

Date	Milestone
Jul. 2012	Martin Wheatley commissioned by UK to review LIBOR setting process.
Sep. 2012	Wheatley Review of LIBOR releases final report.
Jul. 2013	Hogg Tendering Committee selects NYSE Euronext (acquired by ICE) as administrator of LIBOR.
Jul. 2013	IOSCO Final Report on Principles for Financial Benchmarks
Jul. 2013	FSB forms Official Sector Steering Group (OSSG)
Feb. 2014	ICE Benchmark Administration officially becomes administrator of LIBOR
Jul. 2014	FSB releases Final Report on Reforming Major Interest Rate Benchmarks
Oct. 2014	ICE First Position Paper on Reforms for LIBOR.
Jul. 2015	ICE Second Position Paper on Reforms for LIBOR
Dec. 2015	Feedback Paper on ICE proposals to reform LIBOR published
Mar. 2016	ICE releases roadmap for reforms to LIBOR.
Jun. 2016	EU Benchmark Regulation Published
Jul. 2017	Andrew Bailey, FCA speech announcing FCA will not compel panel bank submissions as of end-2021

Source: BlackRock. As of December 31, 2017.

Alternative Reference Rates

Recognizing the uncertain future of LIBOR, regulators have turned their focus to identifying ARR that are compliant with the IOSCO Principles.¹⁴ **Progress towards identifying ARRs for each currency has been undertaken by regional working groups and is at different stages of completion. Further, the rates being selected for each currency have some key differences.**

Principal among the selection criteria for IOSCO-compliant benchmarks is the need for the benchmark to be derived from transactional data, rather than subjective judgement. This has generally led the various working groups to conclude that risk-free or near risk-free rates based on transactions in overnight funding markets produce the most viable ARRs. Exhibit 5 provides an overview of the progress toward identifying ARRs in different currencies.

US Dollar

In the US, the Alternative Reference Rate Committee (ARRC) was formed in 2014 to select an alternative for USD LIBOR. After several years of study and deliberations, the ARRC announced in June 2017 its choice of the **Secured Overnight Financing Rate (SOFR)**.¹⁵ SOFR is an overnight rate based on Treasury repo transactions.¹⁶ SOFR is a brand new rate. As such, there is no existing derivatives market for this rate yet. The FRBNY began publishing SOFR on April 3, 2018.¹⁷ CME Group has said that it will launch 1-month and 3-month SOFR futures on May 7, 2018.¹⁸

Sterling

In April 2017, the Bank of England (BoE) Working Group on Sterling Risk-Free Reference Rates selected the **Sterling Overnight Index Average (SONIA)** as the suggested alternative to Sterling LIBOR.¹⁹ SONIA has been in existence since 1997 and is currently the reference rate for the Sterling Overnight Indexed Swap market. SONIA reflects bank and building societies' overnight funding rates in the Sterling unsecured market.²⁰ In 2016, the BoE became the administrator of SONIA.²¹ SONIA is currently undergoing a reform process to broaden the transactions included in the rate and update the calculation methodology. These reforms are set to become effective on 23 April 2018.²² Unlike SOFR, SONIA is an unsecured rate.

Given that SONIA has been in existence for some time, the market for SONIA derivatives is more developed compared to SOFR. The derivatives market for SONIA swaps (out to 51 years) has existed for some time. These instruments are employed in liability-driven investment (LDI) strategies used by pension funds to manage interest rate risk. Consequently, SONIA swaps are already a part of many GBP investors' derivatives portfolios. In December 2017, ICE Futures Europe launched a 1-month SONIA futures contract.²³ Likewise, CurveGlobal has announced that it will launch 3-month SONIA futures contracts in the second quarter of

2018.²⁴ These developments are expected to increase liquidity in SONIA.

Euro

In the Eurozone, a definitive decision as to the recommended ARR has not yet been made. In November 2017, the European Central Bank (ECB) issued a consultation requesting input on a new unsecured overnight interest rate.²⁵ The Euro Overnight Index Average (EONIA) was initially viewed as an option, but a question remains as to its ability to become IOSCO compliant.²⁶ Efforts to identify ARRs in Europe are intertwined with the EU Benchmarks Regulation (BMR), which requires alternative rates to be identified and contingency plans to be developed for critical benchmarks.²⁷ In February 2018, the ECB announced a working group to select an ARR for the Eurozone.²⁸

Swiss Franc

The National Working Group on Swiss Franc Reference Rates (National Working Group) recommended **Swiss Average Rate Overnight (SARON)** in October 2017 as the suggested ARR. SARON is an overnight secured rate based on transactions in the Swiss Franc repo market.²⁹ The Swiss unsecured/tomorrow overnight index rate (TOIS) was discontinued at the end of 2017 due to the conclusion by the National Working Group that there was insufficient transaction data to continue to support this rate. This necessitated a transition to SARON, which is not dissimilar from a potential need to transition away from LIBOR – albeit for a much smaller market. The transition from TOIS to SARON has been viewed as a success so far.

Japanese Yen

In Japan, the Study Group on Risk-Free Reference Rates announced in December 2016 that it has identified the uncollateralized overnight call rate, or **Tokyo Overnight Average Rate (TONAR)**, as the primary candidate for the JPY ARR. Similar to SONIA, TONAR is an unsecured overnight rate.³⁰

Exhibit 5: Risk-Free Rates by Currency

	ARR Identified	Description	Notes On Status
USD	SOFR <i>Secured Overnight Financing Rate</i>	Overnight Secured	NYFRB began publishing in Apr '18.
GBP	SONIA <i>Sterling Overnight Index Average</i>	Overnight Unsecured	Reforms in process.
EUR	Not Decided.	-	-
CHF	SARON <i>Swiss Average Rate Overnight</i>	Overnight Secured	CHF LIBOR transition to SARON in progress
JPY	TONAR <i>Tokyo Overnight Average Rate</i>	Overnight Unsecured	-

Source: ISDA, Oliver Wyman

Adopting Alternative Reference Rates

While benchmarks that utilize transactional data can be useful alternatives to survey-based rate benchmarks, they are not direct substitutes. This creates a predicament for the adoption of ARR. The market will need to grapple with how to incorporate these rates into asset classes that have traditionally relied on LIBOR as their benchmark. We believe that an effective migration away from LIBOR and towards alternative rates will necessarily hinge upon two main factors:

- (i) Whether ARRs are seen by the market as viable substitutes for LIBOR
- (ii) Whether sufficient liquidity develops in ARRs

Both of these preconditions are highly interrelated: ARR liquidity hinges upon the adoption of ARRs by investors, and the adoption of ARRs is related to whether ARRs are fit-for-purpose as substitutes to LIBOR in the variety of asset classes where LIBOR is used. Markets may ultimately coalesce around alternatives that differ from the ARRs identified by the official sector working groups because the recommendations are not prescriptive. There are several differences between the ARRs selected by the official sector

How is BlackRock Preparing?

Our clients' needs are central to any discussion about global benchmark reform. We are actively monitoring liquidity conditions and are making plans to incorporate alternative benchmarks into our risk management systems. Efforts to address global benchmark reform require a cross-functional approach that includes collaboration between portfolio management, risk management, legal & compliance, technology, operations, and public policy teams.

Examples of how BlackRock has begun organizing to understand and address the implications of global benchmark reform for its client portfolios include:

1. Internal education to promote awareness of the uncertain future for LIBOR.
2. Evaluating existing exposures to LIBOR and considering potential risks to client portfolios.
3. Compressing existing positions to simplify exposure, where possible.
4. Reviewing fallback language and working to determine appropriate action (where necessary), including collaborating with industry and official sector working groups.
5. Analyzing systems readiness.

Given that there are still many unanswered questions, these efforts will likely be in progress for some time.

and LIBOR that need to be considered before deciding whether and how to transition exposures from LIBOR for a given asset class or portfolio.

In this section, we outline some of the key considerations that market participants are discussing. We have also provided suggestions for further work that could be conducted by benchmark reform working groups. However, we note that different asset classes have different needs with respect to finding suitable alternatives.

Much of the focus so far has been on the interest rates derivatives markets under the assumption that other markets will look to derivatives markets for leadership, and due to the fact that derivatives represent the largest notional of outstanding exposures that reference LIBOR and will not mature by 2022. **While we agree that other markets are likely to take direction from the rates market, we are concerned that too little attention has been placed on the needs of other asset classes (i.e., securitizations, loans, and floating rates notes).** Policy makers and market participants have recently begun to think through the implications for other asset classes, and we encourage intensified efforts on this front.

Term Rates

The suggested ARRs are overnight rates unlike LIBOR, which is quoted at seven different maturities out to one year. While official sector bodies have indicated they will eventually produce term rates, this work does not appear to be viewed as a top priority. For example, the NYFRB has indicated that it intends to produce SOFR term rates by the end of 2021, as shown in Exhibit 6 on the following page.

In our view, developing a term structure for ARRs will help smooth a transition. We encourage the official sector to produce terms rates as soon as practicable, rather than leave this for a later stage of the process. Doing so will help avoid market fragmentation that may arise from the market first transitioning to compound overnight rates, and then to term rates several months or years later.

The market is accustomed to indexing off of term rates, and for some asset classes a term floating rate is a requirement for ARR adoption. This is particularly the case for asset classes that require certainty of cash flows (i.e., loans). Overnight rates based on transactional data are necessarily backward-looking. In contrast, LIBOR is a forward-looking rate that measures current borrowing costs for transactions maturing at various points in the future. The availability of term rates could, therefore, reduce frictions and lead to a smoother transition. **Given the magnitude of the changes necessary to effectuate a transition, we believe that if the official sector is committed to encouraging market participants to move away from LIBOR by 2022, the timeline for developing term rates should be accelerated.**

Developing Liquidity

In our view, the single most important precondition for the adoption of ARR is liquidity. Given that the market for LIBOR-based derivatives is one of the largest and most liquid in the world, developing equally liquid markets will be a challenge for any ARR. Unfortunately, the development of liquidity in ARRs has an embedded chicken or egg problem: investors will not adopt ARRs if liquidity is insufficient, but sufficient liquidity will not develop if investors do not adopt ARRs. In the absence of sufficient liquidity, newly established positions will continue to reference LIBOR. While this may present a predicament if liquidity in LIBOR-based products declines, to date we have seen no observable impact on liquidity in LIBOR swaps.

Another important consideration is sequencing. In the US, for example, the ARRC has published a timeline for a paced transition, as shown in Exhibit 6. While this timeline will guide the development of SOFR-based derivative markets, it is less helpful in determining the pace of adoption by investors. For example, as mentioned previously, the current timeline calls for the development of SOFR term rates by the end of 2021. If this is the case, then it does not seem possible to expect sufficient liquidity to develop in term rates prior to the end of 2021. This could place a full transition away from LIBOR well after 2022. That said, we do not expect liquidity conditions to be equivalent at every point across the yield curve. Investors will need to take this into consideration as they review their exposure to LIBOR and consider their approach to a transition. As such, while the dialogue around ARRs and the timelines and sequencing are helpful, the reality is that these timelines are not prescriptive. The market will ultimately drive the pace of any transition. **This means that timelines for building ARR-based derivative markets should not be conflated with the adoption of ARRs by investors.**

Bank Credit Risk Premium

The ARR working groups have largely focused on identifying risk-free, or nearly risk-free, rates due to the decline in transactions in the interbank market. While this makes sense for identifying rates underpinned by transactional data (and hence compliant with IOSCO Principles), it also means that the selected ARRs differ materially from LIBOR.

LIBOR incorporates a bank credit risk premium because it is an unsecured interbank funding rate. In contrast, SOFR does not have a bank credit risk component because it is a rate derived from secured transactions. That said, it is important to note here that the credit risk implications will vary across currencies. For example, SONIA is representative of unsecured overnight transactions, though it is still a nearly risk-free rate.

In the US, calculating a bank credit risk component will be necessary for the adoption of SOFR by asset classes that currently rely on LIBOR. In the environment where both LIBOR and SOFR exist alongside one another, we anticipate the development of a robust basis swap market, which will be key to transitioning. We encourage the official sector to remove any impediments preventing this basis market from forming quickly and growing.

In the absence of a functioning basis market, we believe that certain products will continue to rely on LIBOR for the foreseeable future (i.e., securitizations). A further challenge is whether new issuance will readily transition to SOFR, as there may be prolonged discomfort with the absence of a bank credit risk component.

We understand the value of the credit component for legacy positions. That said, we need to evaluate the role that a credit component provides to a benchmark going forward. One important role of a universally agreed approach to deriving a bank credit risk component (or spread) is that it

Exhibit 6: ARRC Timeline for a Paced Transition to SOFR

Anticipated Completion	Transition Step
2H 2018	Infrastructure for futures and/or OIS trading in the new rate is put in place by ARRC members.*
End 2018	Trading begins in futures and/or bilateral, uncleared, OIS that reference SOFR
1Q 2019	Trading begins in cleared OIS that reference SOFR in the current (EFFR) PAI and discounting environment.
1Q 2020	CCPs begin allowing market participants a choice between clearing new or modified swap contracts (swaps paying floating legs benchmarked to EFFR, LIBOR, and SOFR) into the current PAI/discounting environment or one that uses SOFR for PAI and discounting.
2Q 2021	CCPs no longer accept new swap contracts for clearing with EFFR as PAI and discounting except for the purpose of closing out or reducing outstanding risk in legacy contracts that use EFFR as PAI and discount rate. Existing contracts using EFFR as PAI and the discount rate continue to exist in the same pool, but would roll off over time as they mature or are closed out.
End 2021	Creation of a term reference rate based on SOFR-derivatives markets once liquidity has developed sufficiently to produce a robust rate.

*Note CME has stated it plans to launch CME SOFR futures in 1H2018.
Source: NYFRB

may normalize exposures across asset classes, by fostering one consistent approach rather than disparate solutions. The necessity of applying a credit spread to SOFR, arises only in a LIBOR cessation event. To address this, efforts are currently being undertaken by the International Swaps and Derivatives Association (ISDA) to come up with a standard fallback methodology. Other industry trade associations outside the derivatives markets need to be engaged in this effort. A comprehensive fallback roadmap that accounts for all products that reference LIBOR is necessary.

ISDA Fallback Methodologies Work

ISDA is developing fallback proposals for calculating a spread between SOFR and a bank credit risk premium that could be used were a LIBOR cessation event to occur. While the stated objective of this work is, therefore, not to create a credit spread that can be used on an ongoing basis to facilitate equivalence between SOFR and LIBOR, it is possible that this work becomes a model for a solution that exists alongside LIBOR, and is applied beyond the derivatives markets. **As such, we encourage increased engagement with ISDA by working groups exploring issues for other asset classes, besides derivatives.**

Central Clearing

Given the move to central clearing of interest rate swaps in both the US and Europe, today LIBOR-based swaps are centrally cleared. This transition resulted from a multi-year effort by market participants to comply with the clearing mandate. Regulators, globally, have been steadfast in their view that central clearing reduces financial stability risk associated with bi-lateral transactions.

We believe it is very important, therefore, that in transitioning the interest rate swaps market to new benchmark rates, the progress made to transition this same market to central clearing is not undone. This could occur in the US, for example, if central clearing counterparties (CCPs) do not readily accept SOFR swaps for clearing. In the UK, SONIA-based swaps are already clearable out to 51 years.

In the absence of cleared derivatives markets for ARR, not only will there be a basis risk between LIBOR and ARR, but there will also be a basis risk between cleared and uncleared swaps. On this front, CME Group has stated that they are “committed to preparing OTC Clearing solutions for OIS referencing [SOFR], as soon as there is sufficient pricing history and market activity to implement our risk management processes.”³¹ We encourage authorities to engage with all central clearing counterparties (CCPs) to ensure ARR-based swaps will be accepted for clearing quickly. Regulatory authorities also have a role to play by ensuring that requests to offer these products are approved as quickly as practicable.

Differences between ARRs

The ARRs identified by various currency working groups have some differences – in particular, some ARRs are based on collateralized transactions and others are not. In addition, markets are moving at different paces towards adoption of ARRs. To the extent that cross-currency hedges or other cross-currency transactions are included within a portfolio, differences in the methodologies as to how ARRs are calculated could create additional basis risks that need to be considered. Likewise, timing differences between the development of ARR-based derivatives markets in various currencies could have additional implications for cross-currency positions. **On this front, we emphasize that operating in currency silos will lead to suboptimal outcomes, and we encourage ARR working groups in different jurisdictions to coordinate closely.**

Volatility

We note that some commentators have highlighted potential concerns related to the volatility of ARRs that are based on transactional data relative to LIBOR. In our view, this is a real concern that may deter some end-investors from adoption. This could lead to higher costs and wider bid-ask spreads when transacting. However, we do not want to conflate this concern about volatility with the fact that volatility of rates (and other asset classes) has been low for an extended period of time. In other words, we should be careful not to confuse benchmark reform with an exit from Quantitative Easing (QE) monetary policies, and years of low interest rate volatility.

Precedents for Adoption of New Rates

While there are challenges to the adoption of ARRs, new benchmarks have been introduced successfully in the past and the market has adjusted. The best example of such a transition is the adoption of Fed Funds OIS in the US swaps markets. Fed Funds OIS represents the daily compounded level of Effective Fed Funds over the term of the swap contract. There has been a significant increase in the trading volumes of swaps that reference the Fed Funds OIS rate over the past several years. This change has occurred because Fed Funds OIS is the more appropriate discount curve by which to value swaps, which are only collateralized by cash and/or government securities. The adoption of OIS has also been driven by its usage as a discount curve for calculating Price Alignment Interest (PAI) by CCPs. Further, LCH.Clearnet and ISDA have adopted OIS for many standard swap contracts. The example of the adoption of OIS is a good roadmap for how the USD LIBOR swaps market could eventually transition to SOFR. Recognizing this, the ARRC has recommended that CCPs begin discounting PAI off of SOFR.

The Swiss Franc market’s transition from TOIS to SARON also presents an example of new rate adoption – albeit for a much smaller market than USD LIBOR.

Addressing Legacy Positions

While identifying ARRs is a necessary first step, a comprehensive transition plan for existing positions that reference LIBOR has yet to be developed. To date, much less attention has been given to addressing legacy positions that reference LIBOR. LIBOR is embedded in numerous types of financial instruments, many of which have long-dated maturities. In USD LIBOR alone, the NYFRB estimates \$36 trillion in notional outstanding will not mature prior to the end of 2021.³² While only a small portion of the nearly \$200 trillion outstanding notional as of 2016, this is still a sizeable exposure for global financial markets. And, current data underestimates the amount of legacy positions, since new transactions will continue referencing LIBOR until sufficient liquidity develops in alternative rates.

The failure to effectively transition legacy positions is the number one risk we see to investors – and more broadly to financial stability – from global benchmark reform. While regulators have given the market several years to undertake a transition, there are a number of operational and legal hurdles that must be overcome across a broad array of disparate transactions. It will take time to find appropriate solutions for these challenges and then to implement them across the marketplace. A number of working groups convened by industry associations and the official sector are forming to begin exploring and working through the transition issues for different asset classes.

“Fallback” Language

Most financial contracts contemplate short disruptions to the publication of LIBOR and establish fallbacks to address how such a situation should be handled. However, legacy contracts do not generally contemplate permanent LIBOR cessation. As a result, fallback methodologies may be suitable for a short period of time but may not be workable over longer periods. For example, floating rate notes typically have fallback language that calls for the rate to be determined based on the last published LIBOR rate. This approach may not have material consequences in the short-term. Over an extended period, however, this would convert a floating rate note to a fixed rate note, fundamentally changing the risk-return profile of the investment.

The standard fallback language differs by asset class, which means that different solutions may be needed depending on the financial instrument in question. To the extent possible, updated fallback language should be incorporated into newly established transactions, ideally with consistency across positions, products, and markets (as appropriate) to minimize basis risk for portfolios.

Efforts to develop fallback language that contemplates the cessation of LIBOR for various asset classes must incorporate the views of investors to ensure they will be agreed to and adopted across the relevant market. In particular, any language involving discretion in determining

Key Recommendations & Observations

1. Failure to effectively transition legacy positions is the number one risk we see to investors, and more broadly to financial stability.
2. Too little attention has been placed on the needs of other asset classes (i.e., securitizations, loans, and floating rates notes) outside the derivatives markets.
3. While the suggested ARRs can be useful alternatives to LIBOR, they are not direct substitutes.
4. If the official sector is committed to encouraging a move away from LIBOR by 2022, the timeline for developing term rates should be accelerated.
5. Timelines for building ARR derivative markets should not be conflated with adoption of ARRs by investors.
6. ISDA’s fallback work to address a LIBOR cessation event may form the basis for a solution beyond the derivatives market. This work should be socialized with other asset classes.
7. In transitioning interest rate swaps to new benchmarks, progress toward central clearing must not be undone. This requires rapid approval of SOFR swaps for clearing.
8. Operating in currency silos will lead to suboptimal outcomes. We encourage coordination across asset classes and currencies.
9. Efforts to develop fallback language that contemplates the cessation of LIBOR must incorporate the views of investors.

an appropriate replacement rate should include a fallback that allows the relevant transaction parties to agree on a replacement, rather than placing sole discretion immediately in the hands of a calculation agent, administrative agent, issuer, or other party.

Updating Existing Contracts

Once appropriate fallback language has been identified, incorporating that language into existing contracts (where it is not already present) is another challenge. Different asset classes have different mechanisms for achieving this with varying degrees of difficulty.

Perhaps the most efficient mechanism is the ISDA protocol that can be applied to existing swaps contracts. ISDA is currently discussing multiple protocol proposals related to global benchmark reform. Once the protocol(s) are agreed by ISDA members, they can be applied broadly to update existing swap contracts or even to new swap contracts on a go forward basis provided in each case that there is adherence by a broad swath of market participants.

In contrast, floating rate notes may require unanimous consent by all bondholders in order to amend interest rate provisions in existing documentation, and obtaining such consent can be costly and time-intensive – or nearly impossible in certain circumstances.³³ More work will need to be done to find an appropriate solution for asset classes where there is no existing mechanism that can facilitate changes to a large swath of contracts in an efficient manner.

Investors also need to consider the cost-benefit of updating existing contracts based on the risks that current fallback language presents to their portfolio, relative to the legal and regulatory impact of updating such contracts. In some cases, updating contracts may not be appropriate for all investors, or in all cases.

Systems Readiness

Technology systems that house LIBOR data as part of the investment management process will need to be updated to take in and incorporate new data streams, particularly with respect to SOFR, which is a brand new rate. In addition, such systems will need to calculate an implied term structure for overnight rates and embed new analytics to account for additional basis risks that may be introduced due to the presence of new benchmark rates. All participants in the ecosystem, from CCPs to custodians, to asset managers and asset owners, will need to make the appropriate preparations including both user acceptance and integration testing periods. Given the magnitude of systems builds that may be required, market participants should consider what changes are needed in the near future. BlackRock has already begun to evaluate potential systems changes that will be needed to facilitate the inclusion of new rates and discount curves into our technology systems.

Netting Down Existing Positions

One way that investors can ease the transition is by netting down positions, where possible, to reduce the number of transactions that may ultimately need to be transitioned. Netting down positions entails closing out offsetting swaps whose economic exposures net to zero, rather than leaving these positions outstanding until maturity.

Alternative Instruments

Much of the focus surrounding market preparations for a transition away from LIBOR has been on a transition to ARR-based instruments. However the transition away from LIBOR requires only that the volume of outstanding LIBOR-based transactions falls away and although a growth in the use of ARRs in financial transactions may be helpful, it is not in all cases a pre-condition. Where liquid markets in alternative instruments already exist, widening investors' horizons to these possibilities will assist in a transition away from LIBOR.

Portfolio Management Implications

We cannot forget that financial transactions do not exist in isolation within a portfolio, and one position in a portfolio may have economic relationships to other positions. This portfolio context requires careful consideration and underscores the need for coordination across asset classes and currencies. Below are a few key considerations.

Asset Swapping. Asset swapping is a practice by which an asset's cash flows are converted between fixed and floating payment streams using the swaps market. The interest rate swaps market allows for date matching on an asset's fixed coupon payments. By paying fixed and receiving a floating rate, the asset's duration is hedged back to a shorter floating rate, in many cases 3-months. The net stream of flows to the investor is the floating rate plus the asset's spread over the swaps curve. The traditional floating rate index for these types of transactions is LIBOR. A large amount of this type of exposure does mature prior to 2022, but we mention this type of transaction to bring attention to the fact that not all swaps are executed on a standalone basis. Every swap trade is done for a specific purpose and in the case of hedging, any transition will have to take into account implications for both the hedge and the asset itself.

Cross-Currency Transactions. As previously mentioned, there are implications for cross-currency transactions and hedges, particularly to the extent additional basis risks emerge from the existence of ARRs alongside LIBOR. ARRs adopted for different currencies will have uneven liquidity conditions, at least for a considerable period of time. This may present the risk of fragmentation for cross-currency products, as these products have embedded inter-dependencies between reference rates in different currencies. Such inter-dependencies in cross-currency transactions and their potential economic implications will need to be evaluated carefully, and taken into consideration as transition plans are developed.

Liability-Driven Investing (LDI). LDI strategies can be employed by pension funds as a means of hedging long-dated interest rate risk. According to one estimate, more than one-third of existing hedging arrangements in LDI strategies is implemented using swaps that reference LIBOR.³⁴ Within these strategies, interest-rate swaps are buy-and-hold instruments. This makes the perspective on liquidity a little different for LDI investors relative to investors pursuing other types of investment strategies. Specifically, LDI investors care about market liquidity upon entry into an interest rate swap, but because these swaps are established as long-dated buy-and-hold positions, the need to unwind such a transaction may never arise and, even if it does, will not occur soon. As such, LDI investors are less likely to be concerned about the future liquidity of long-dated interest rate swaps.

LDI strategies use derivatives to manage risk and indeed investors give up return to manage risk by reducing allocations to growth assets to invest in hedging assets. In that context, retaining a portfolio of LIBOR-linked swaps after 2021 when the indices might end, or meaningfully change is not likely to be a good risk management approach. As such, the threshold for liquidity and costs may well be lower for LDI investors to close out of LIBOR swaps. Further, as mentioned previously, liquidity will likely gradually migrate out the curve over time, meaning that the long-dated interest rate swaps used by LDI investors will likely be the last to build appreciable liquidity, and as such, could delay or complicate the transition for LDI end-users.

Another important point for LDI strategies is to consider what alternative instruments to LIBOR-based swaps are available and could be used to replace the exposure that currently comes from those swaps. In particular, derivatives that reference recommended ARRAs may not be the only option. In most developed markets there is already in existence a highly liquid market that can provide this interest-rate exposure; specifically, government bonds. In the UK, there has been a shift towards the use of leveraged government bond holdings over the last 5-10 years at the expense of LIBOR-based hedging, and for many UK pension schemes, switching LIBOR swaps into gilt holdings will be a good alternative to SONIA. To that end, any action that the official sector can take to increase liquidity in secured financing markets and/or bond futures markets would be welcomed.

The one-way nature of many of these strategies (i.e. pension funds receive fixed rates to hedge the interest-rate sensitivity of pension liabilities) highlights the importance in engaging all market participants. By definition, for every fixed rate receiver there is a fixed rate payer and a smooth transition of legacy positions will require that both sides of the derivative market adopt a similar transition process.

Conclusion

The official sector has given the market a little over three years to adjust to a new chapter for LIBOR. While much work has been done already to identify alternative reference rates and raise awareness, more work needs to be done to develop a comprehensive transition plan that is coordinated across asset classes and currencies. This will help to ensure that any transition away from LIBOR is orderly and in the best interest of global financial markets and investors.

A large amount of notional exposure will remain outstanding beyond 2021. And this will only increase for the foreseeable future because new contracts and securities are issued every day that reference LIBOR.

Importantly, we need to recognize that a transition will not be free. Just as costs were incurred by the marketplace to transition to central clearing of over-the-counter derivatives, there will be a cost associated with a transition away from LIBOR. Potential costs include economic costs associated with basis risks from the introduction of new interest rates and legal costs, where it becomes necessary to re-paper and renegotiate existing contracts. The preferred solutions will avoid imposing significant costs on investors.

We believe that moving from one benchmark to another will be most cost effective where markets for ARRAs are deep and liquid. As a fiduciary on behalf of our clients, the potential costs associated with any transition will need to be considered in order to determine an appropriate path forward. Given the portfolio context in which investors (both asset owners as well as asset managers managing money on behalf of their clients) operate, the need for coordination among asset classes and currencies becomes all the more important. Client and portfolio objectives must be considered before engaging in any transition – and in some cases transitioning to new rates may not be feasible or desirable.

Education and ongoing dialogue about the costs, risks, and potential benefits of transitioning to new benchmarks will be critical to finding appropriate solutions for our clients. Going forward, industry working groups and official sector bodies must turn their focus critically to the implications for investors (the end-users of LIBOR), as well as the portfolio context in which their exposure to LIBOR currently exists. Indeed, good outcomes for the end-users of LIBOR will lead to good outcomes for the market as a whole.

We applaud regulators' efforts to implement benchmark reform with the goal of ensuring robust and sustainable benchmarks. Today, benchmark reform raises many more questions than answers, and these questions will need to be addressed over the coming months and years.

We look forward to working with regulators and our clients to address the challenges that lie ahead, and to promote an effective and well-functioning marketplace that allows our clients to meet their investment objectives.

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*Note that pages 4 and 6 of this *ViewPoint* were updated on April 4, 2018 to reflect developments with benchmark reform efforts in Europe. In tandem with those changes, footnotes 26 and 28 were also updated.

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