

The Global Transition away from labor

Industry and market sentiment

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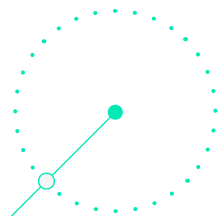












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Introduction.

METHODOLOGY AND ACKNOWLEDGEMENTS

This report represents an update on a series of studies we issued in 2019 and 2020 on the industry progress made in meeting the transition deadlines for the Global Transition away from LIBOR. Our prior document, issued in December/January focused on the year end results for the participants and at the time, initial feedback on the consultative document issued on November 30th, 2020, by the FCA. After the update and final consultative document was distributed in early March of this year, we reached out to participants to ask for their input on the impact of that guidance crossing a myriad of the same topics that we had covered in previous studies. However, in this report there was substantially greater focus on several topics: the different public and private sector approaches used in the US vs other geographies and the detailed debate on the role of SOFR and alternative reference rates being proposed in the USD market. We are immensely grateful to the participation of all our clients in these efforts which we believe will be helpful in providing a synopsis in detail on the state of the transition with approximately six months to go before the cessation of the use of LIBOR.

The methodology we followed in this report mirrored what we have utilized in previous efforts. In brief:

- We conducted approximately 50 interviews with US and Non-US G-SIB's, foreign banks, US Regional Banks, asset and fund managers, insurance companies, corporations, specialty lending firms, clearing and settlement houses as well as software & technology firms, research companies and law firms. Those interviews were conducted from mid-April through the end of May this year.
- As a result of a series of releases by the ARRC, FCA and other bodies, we did a meaningful set of follow-up discussions with ~30 firms in June to review specific topics surrounding Term SOFR and various Credit Sensitive Rates, several of which were released during that time frame.
- Immediately prior to releasing this paper there were some additional announcements, at an FSOC Meeting on June 11th relating to the transition in the US. As a result, we completed a very small outreach to firms to garner their feedback on those discussions.
- We were especially pleased that over 90% of our participants in this project were involved in most of our studies the past two years allowing comparisons of their progress and changing views.

These efforts would not be possible without the contributions of many of our managers and consultants who have worked long hours to support them. This was a particularly challenging effort given the number of discussions required to keep up with the quick policy pronouncements. In specific, to all our Sia colleagues who have assisted with these projects while working on their engagements full time; thank you for devoting your time and energy to our industry efforts. Finally, our profound appreciation to all our participants for their patience in working with us on this initiative and assisting us in completing this work successfully.

Transition Progress.

Our study results identified consistent progress by major financial and corporate entities to meet the cessation deadlines including risk assessments, contract review, systems updates and reference rate transitions from LIBOR to other reference rates. There is less progress across the US among mid-size and smaller market participants that will require redress for a successful transition for USD Libor.

Global Banks

Our study reflected that Globally Systemically Important Banks (G-SIBs) continue to be on track to hit the cessation triggers identified throughout 2021. Almost without exception, these institutions started very early in the process by setting up the necessary governance and transition infrastructure, establishing working groups/workstreams to implement the transition and constructing the necessary support steps for contract review & extraction, conducting risk assessment across their business lines for LIBOR exposures, identifying key operational, system and technological upgrades that would be required and a rapid inclusion and integration of their second and third lines of defense in that effort. In the UK and elsewhere in Europe, firms rapidly prepared for regulatory oversight and in the U.S., even without specifically identified safety and soundness criterion in place, banks were ready for anticipated official sector oversight.

However, larger G-SIBs noted that the pace of their “lending businesses, both consumer and institutional readiness” have been impacted by the postponement of certain tenors until June 2023. Banks recognized that on the retail side that the origination of SOFR based ‘arms’ had begun and there were initiated conversion efforts and that they were finding ‘fewer market headwinds on the retail side.’ Institutions often noted that they had established a two tier process, “tenors going away by year-end being priori-

tized; loans in SONIA for example getting attention and looking to remove those from the backlog with other tenors delayed for redress until 2022.”

As other alternative rates are being considered by the official sector, we noted that most G-SIB’s had begun preparation for a varied multi-rate environment across necessary operational and infrastructure efforts. Larger banks noted that “SOFR was not the only rate they were working on” and that “they had established decision-making and approval frameworks to assess other rates and understand their characteristics and risk.” Others described plodding “week by week progress” reviewing new reference rate alternatives. They also commented on the critical role Term SOFR implementation will play in the months ahead to assist in resolving some of these challenges across the U.S. market.

Regional Banks

Regional Banks have made meaningful progress towards meeting their transition goals. Though unquantified, broad sentiment existed among participants that while many US-based community banks, corporations, and various types of fund management firms likely have considerable work to do to meet transition deadlines and could pose broader operational challenges to the market.

First, the vast majority of U.S. regional banks do not have meaningfully large over-the-counter derivative businesses; most of them are not market makers except in rare instances, and

they almost exclusively use derivatives for hedging purposes. Regional banks, largely are dominated by a wide variant of lending businesses—commercial, corporate, retail, etc. Hence, their focus is near 100% on the transition of USD LIBOR. *Fourth, most of these institutions (with some exceptions) have never had the ability to invest the same resources (human or financial), nor have they had the backing of management for an aggressive timetable for the transition away from USD LIBOR. Finally, unlike some of their colleagues.* These institutions have almost exclusively seen this transition as a rather ‘collegial’ industry based, non-competitive effort. These firms have seen their efforts as a major infrastructure ‘lift’ and an ability to drive client businesses with an acceptable RFR replacement by year end.

The most pressing challenge for regional banks is the on-going discussions regarding RFR options that are being reviewed by the ARRC and the official sector. A number of these institutions would either like a Term rate for SOFR or possibly a Credit Sensitive Rate. *While we are late in the process to garner liquidity for the market, many of these institutions would like the official sector to opine on what are the possible and acceptable alternatives to SOFR compounded in arrears.* Many have executed trades with ‘simple SOFR’ and would not anticipate push-back from their regulators if that is the best option available.

End-users

Assessing the state of ‘end-user’ preparation for the transition is understandably difficult given the broad range of defining who that populous is. The end-user participants in this study, which were generally more so-

phisticated, have been preparing for a reasonably lengthy period of time and have communicated their general readiness.” Many noted that the consultative paper took some pressure off and enabled a readiness for a new RFR by year end.” Another layer of our end-users, both financial and otherwise (including some insurance companies), have already started processing SOFR derivatives; initiated SOFR linked funding agreements; and built-up changes in their systems to prepare for that product transition. **Most advanced/larger entities are well prepared and have traded/issued in SOFR limitedly or are ready to do so once issues on alternative reference rates once they are sorted out.**

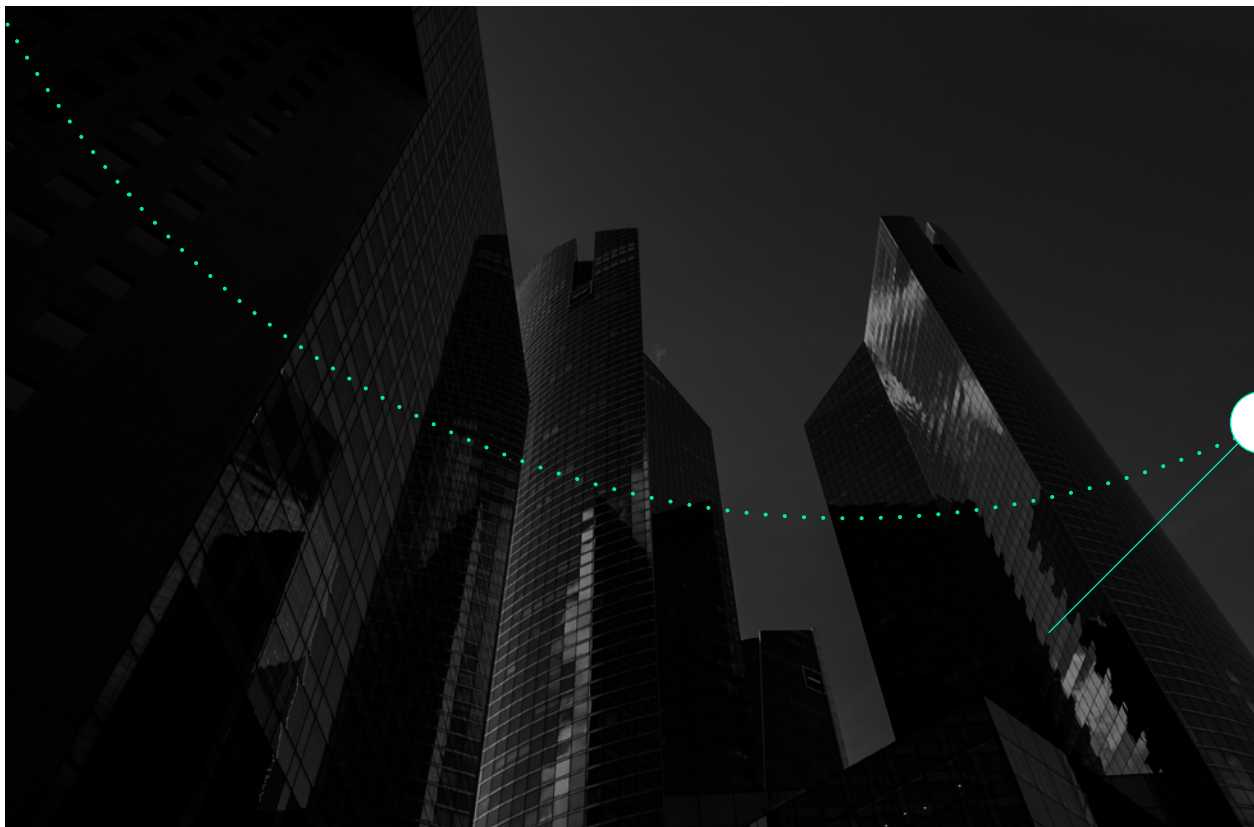
In fairness, this tends to represent the more advanced portion of the end-user market. Our bank participants agreed that the percentage of their counterparts who have made truly measurable transition progress could be on the higher end 15-20% but more likely closer to 5%. These figures vary depending on whether these firms have a meaningful derivatives portfolio and would

have been cajoled into signing the ISDA Protocol or are holding out. In separate presentations Sia Partners had during this study, we found that less than 50% of ‘smaller-mid-sized’ corporates felt that they had made some progress towards the transition. There are segments of the financial end-user community who clearly see some advantage in identifying the potential introduction of basis risk from additional reference rates and determining how their portfolio’s will align with those possible changes. Progress among this sector will vary greatly over the next 3-6 months as we get closer to the cessation date as firms decide steps, they need to take to meet deadlines. Participants thought it was plausible that there would be a big Q4 push as impending deadlines drew closer.

Contributing Steps towards the Transition

Most banking institutions began their transition process with a risk assessment at least 18 months ago, if not earlier in 2018 or 2019. This step was

crucial to initial efforts and at the time institutions identified approaches for a business line by business line breakdown of their exposures and separated them by client type. These contracts were categorized by product group and client group. Firms often used either an outside automation provider to complete this work (if the number of contracts were 1000 or more) or used an in-house capability to achieve the same result, along with manual human resource contributions. Efforts on operational and system upgrades varied. Participants noted early on that the complexities of transitioning from LIBOR to SOFR compounded in arrears would pose meaningful challenges and require extensive resources. Vendor assistance for both cash and derivative systems (common to most firms but not all) were typically still current at the time of our study and will continue through year end. Overall, our study concluded that there was limited change in progress from Q4 2020 (our prior study) through nearly the conclusion of Q2 2021.



Challenges of Transition Implementation for Global Banks

Throughout our study work, larger clients have identified numerous issues which have arisen as they have worked to finalize their transition plans worldwide. The issues that have arisen are varied and get covered in several other segments of our paper. Core to most institutions concerns were the different functionalities of their home regulators in their approach to the transition; the introduction of variant RFRs in the U.S. market; and the broader messaging around those issues. An enforcement of the Status of other currencies transitions vs USD LIBOR-SOFR. We will look to tackle these below.

Consistent with our prior studies, participating firms echoed that their European counterparts, and often even their European branches/subsidiaries/affiliates, had moved ahead on the transition in a more rapid manner.

Institutions commonly referenced that there was more explicit direction from the outset from their home regulator; an earlier start in the UK/EC than the U.S., clearer deadlines that did not waiver and importantly, a smaller volume market in other parts of the world.

European institutions in the study noted that they have not seen nearly the same pace of the SOFR based transition as they have with SONIA and UK progress, and even other reference rates which has included building out some of the look back periods into their methodologies. Others noted that they have already spent time with leading clearers (LCH); had completed work on their European stack and were picking up other currencies like Yen/Sterling/Swiss.

Some sentiment was shared that the US approach of “recommendations” did not instill sufficient motivation for their peers to evaluate their risk appetite and determine next steps. Others referred to both the UK and Swiss approaches as “definitive, achieving results vs. the U.S. being in a “no man’s land” for too long. Others noted that



the dates from the various guidance bodies (PRA & Bank of England in the UK and the ARRC in the U.S.) often differed, creating further misunderstandings. Participants added that the UK approach was “milestone driven with a consistent pace and honest and proper project goals and less of a “talk shop” which mirrored other efforts.

Client Relations

Most of the largest banks globally have completed their initial client outreach and initiated contacts with some specific client groups. They have very finished and complete internal capacities ranging from websites, educational sharing with clients, direction and background on the various reference rate options, and regulatory input on timing. A larger U.S. based bank commented that “we have targeted communications and allow us to inform them about readiness, what they need to do with their vendors and consideration of investment decisions.” One regional bank commented that “there has been meaningful client outreach and our relationship managers have been educated on the topics to raise in conversations.”

The pace of US regional banks was somewhat different given that the pace of the U.S. adoption of a final reference rate is different than that of the UK and other parts of the world. U.S. Regional banks are also among the largest proponents of CSRs (Credit

Sensitive Rates) so are likely to have taken a slightly different approach to client outreach to date while those decisions are being reviewed by the official sector. One of our regional banks commented that “we have set up numerous calls beginning in 2020 and a hub on our website to educate our relationship managers on a real time basis.” Regional Banks, alike all others, specifically created websites have been useful for both internal and external about building out communications to clients via the RM’s to better understand SOFR and other alternatives.”

Client outreach efforts at some junctures need to morph from websites and dialogue to substantial remediation. Others believed that their clients would not dictate the pace and at some point, the market would embrace one or several rates and clients will adopt those. Foreign banks agreed their legacy contracts and the roll-off -from certain tenors ensure that this will not be a burning issue for them to resolve. Firms agreed that customers wanted an answer to the simple question which is “we used LIBOR last year, what’s next? We are starting to drive our training modules to our bankers so they will know how to handle those discussions.” For those where there are a larger number of contracts which expire by June 2023 firms noted that the revisions would need to take place sooner vs. later and be part of their broader discussions with customers.

Infrastructure.

Study participants along with help from their vendors were on target in Q3/Q4 to meet specific cash and derivative system updates. Smaller firms who have yet to land on SOFR as an alternative reference rate due to its complexity or want a credit sensitive rate instead are likely going to be more last-minute adherents. Risk and capital issues were getting more extensive review at larger firms in the US as regulatory oversight increased.

Systems, Operations and Risk Capital and Modeling for the Transition

Firms noted that their systems were ready to handle the transition. Some noted that their “mortgage servicing platforms were mostly in-house, and their internal capabilities had been supported by a series of vendor mortgage updates and scheduled for readiness by the end of Q2 in advance of the cessation and allowing time for doing sample trades. It was common for the regional banks to have focused on accruals early on and some commented that they “were a mix of internal and external systems and have built out a timeline that should have us ready by September 2021.” Generally, they agreed it was not a big concern to get to the finish line.

A few of the regional banks noted that they were not burdened with multi-cur-

rency exposures and that they had already built-in approaches for SOFR in arrears and systems had functionalities for doing lookbacks. Others who also had expressed support for BSBY or other Credit Sensitive Rates noted that a tight timeline to handle all the RFR’s could be achieved. While some degree of segmentation aligns to Cash and Derivatives, most key vendors expressed those institutions are ready for the Rates transition with primed modules, patches, and code which offer the enhanced functionality necessary for future implementation. International banks, also of good size, noted that they would have manual workarounds for risk processes and is finalizing their cash and derivatives efforts. Some had not completed their reference rate mapping but those will be ready by September of this year, and they all seem to have patches for cash or derivatives. In summary, most of the

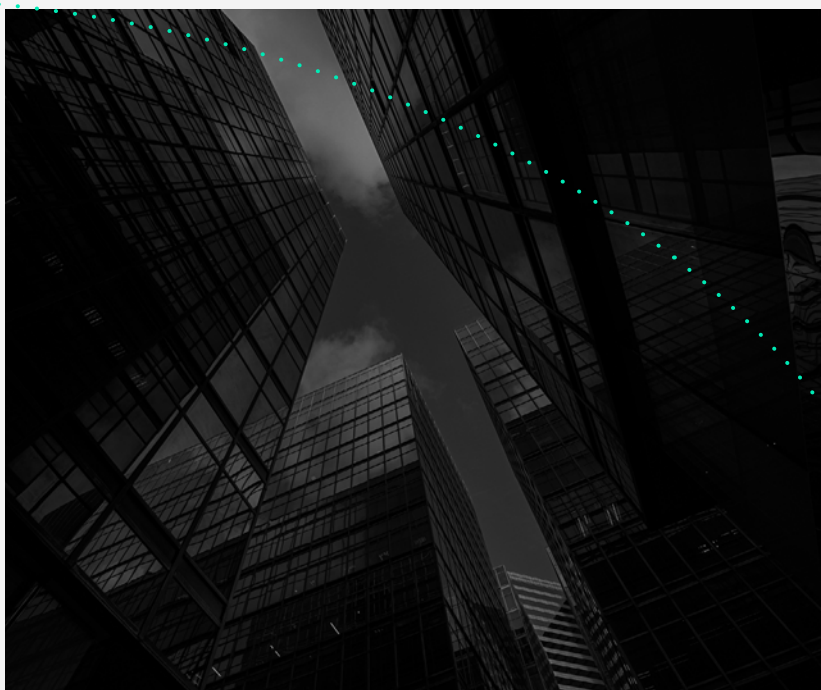
firms felt, barring new major changes that they would require investment or severe changes in regulatory or industry requirements or practices, that they would be fully operational by the Fall.

Technological Capabilities for Credit Sensitive Rates

As we noted at the outset, there was substantive feedback on this question and the broad consensus was that firms could handle the additions without significant challenge. This institution like many others noted that “in addition they had been preparing for a multi-rate environment in comparison to a relatively *homogenous* LIBOR environment.

We raised with firms their capacity to handle accrual and accounting issues within the ambit of the upgrades. The feedback was divergent. An investment entity noted that their systems already support SOFR for securitized products, but upgrades were required for compounding in arrears for accounting issues. A firm with more of a lending focus noted that their efforts were dependent on accounting SOFR approvals by the FASB as part of the hedging accounting index. They would then need to await developments for CSRs to finalize their work on accrual issues.

One of the larger G-SIBs had completed a high-level assessment and felt that they would be ready for BSBY or any other CSRs. They noted that the investment would be “less complex and require significantly less effort in comparison to the effort that was required to become operationally ready for SOFR.” This institution, like many others, noted that “in addition, they had been preparing for a multi-rate environment in comparison to a relatively *homogenous* LIBOR environment.



We raised with firms their capacity to handle accrual and accounting issues within the ambit of the upgrades. The feedback was divergent. One of the G-SIBs commented that they had additional analysis to complete but anticipated being able to provide a more “detailed response, specific to accounting, accrual issues, pricing and other challenges in a timely manner.” A firm with more of a lending focus noted that their efforts were dependent on accounting SOFR approvals by the FASB

as part of the hedging accounting index. They would then need to await developments for CSRs to finalize their work on accrual issues.

Operational Issues Related to Electronic

The timing associated with updating message structure provides additional challenges as the SWIFT organization has a rigid timeline for providing new requirements to update message struc-

tures. Many firms will have to rely on tactical solutions while the industry waits for a strategic upgrade in 2023.

Capital Issues, Model Validation and Regulatory Initiatives

First, soliciting information was difficult. However, this information was almost exclusively in the domain of the risk specialists and not with those who had broader transition remits.



Second, the focus of the participants was not on regulatory capital but rather on either the ‘cost of funding’, ‘asset liability management’, or the implications of ‘economic capital’ by the transition from LIBOR to SOFR.

Third, participants agreed that as ensuring their risk models met both market/industry and eventually regulatory best practice, the issue was less than pressing. Firms noted that unlike other portions of their transition effort, this initiative rarely had dedicated resources to purely the LIBOR transition, and consequently other regulatory demands took precedence.

Fourth, there were a minimal number of firms who had engaged their regulatory on this topic; the group was essentially comprised of only the largest institutions. Regional banks for example, had less dialogue on this issue but were focusing on their own internal efforts to determine what implications this might have for the bank.

As we noted above, there was substantial discussion throughout our reference rate replacement segment about the impact that the transition from LIBOR to SOFR would have on the lending environment. Respondents from these regional banks see the impact of the transition impacting their ability to cost-effectively manage their net interest margin. One of the large global banks explained, “the regional banks feel that they cannot lay off the risk in the back-to-back books, which could reasonably impact what they will face. That creates differences between their net interest margin (NIM compression) and notional compression.”

One larger bank summarized this well for most of the participants by noting that “as new CCAR stress testing requirements flow into other derivative market shock scenarios, we would incorporate SOFR and LIBOR as part of our overall risk management design. We anticipate that rates will converge, and the value-at-risk (VAR) numbers should be roughly the same. We would expect that the volatility and correlation between the two rates will synchronize



as both LIBOR and SOFR stabilize and there is limited volatility in the markets.”

Potential Capital Impacts on the Introduction of a Credit Sensitive Rate

The feedback on the capital implications of an introduction of a CSR likely depended on whether the respondent was an advocate of the rate (and felt it was nonexistent or limited) or had not studied it yet and thought the question might be open to further consideration.

One trader noted that “I question whether moving to CSRs would have a material impact on capital/stress test results. I expect CSRs to move in line with any assumed moves in LIBOR models. SOFR in stress may have an impact, but it is not currently expected to be material. I trust the ARRC which has already made recommendations for better regulatory guidance on this topic.”

One of the larger global banks provided their own perspective on the U.S. dialogue here. “One of the items we worry about the most is not just the capital impact on earnings but on interest rates as well. We can envision real mismatches with assets and liabilities creating meaningful basis risk. We know the transition will introduce real basis risk and it will need to be capitalized.

One noted, “how big is our basis risk or re-balancing that basis risk is not

beneficial with SOFR. Our product pricing and those liquidity impacts on sensitivity in a stressed environment and how you price that into your basis risk management is a challenge. How do you think about a natural hedge in a stressed environment—how do you think about unfunded commitments when you have negative correlations on the rates while being realistic about the pricing.”

Regulatory Capital Add On

Some firms hypothesized it was possible that if the uptick in SOFR was not sufficient, the Fed and other regulators ‘could’ consider changing the risk weighted assets to spur that growth. Admittedly this exchange occurred prior to the meaningful efforts to introduce ‘Term SOFR’ to the market which has changed some thoughts among our participants. However, there was a dialogue regarding the use of capital as a ‘stick’ without the carrot.

One major investment entity who had dialogued with banking firms noted that “risk weighted assets could get interesting as the Fed could pressure firms with new requirements. The Fed could also create new non-SOFR capital requirements with less flexibility on SOFR amendments which could raise other issues.”

To summarize, there was very limited feedback among participants on whether a capital surcharge was likely or advisable and that the Federal Reserve and the ARRC would work in as collegial manner as possible to achieve the best possible result to avoid imposing any restrictions on the market on what reference rates were acceptable to allow the industry to determine what reference rates would achieve appropriate liquidity and meet broader criterion.

What is also clear is that many banks are doubtful that this sweeping statement can be made for some grouping of their clients who are smaller, have less exposure to LIBOR and have started this process out later than others.



Contracts.

Study participants concurred due to exemplary work by the ARRC, ISDA and industry working groups that firms had transitioned across both derivative agreements (via the ISDA Protocol) and cash instruments. Client remediation continues to lag in the US as many clients are reluctant without demonstration of SOFR liquidity in the market and further public sector clarifications to finalize their RFR transitions from LIBOR.

Progress

ARRC, ISDA, LSTA and other global working groups, have worked steadily the past several years with the markets, ensuring a high level of preparation on contract review, extraction, essential language and readiness for remediation across cash and derivative instruments, effectively left the industry participants prepared in terms of contracts and legal exposures. Respondents have noted that there are specific legal shortcomings in state legislation that was passed in NY that requires redress in the proposed Federal legislation being considered by the Congress.

Participants have consistently noted over the past two years that the original framework, feedback structures, and timetables for release have been completed consistent with most timelines with limited exceptions. Second, these efforts have worked efficiently with efforts outside of the U.S. and most of the initiatives have been identified with meaningful global backing. Third, whereas other areas in the transition have produced some clear friction among participants and slowed progress, there has been broad support in our interviews with the eventual outcomes produced by the industry.

Initially, we inquired what participants thought about the broad progress in implementing the ARRC hardwire fallback language. The consensus across all groups was that the pace and success of those efforts had gone well and that they were on schedule to meet the

varied LIBOR cessation requirements inclusive of all tenors. Most had prioritized their contracts across business units and then on maturity dates of expiration. Currently many of those institutions want to interact and remediate with clients using a form of SOFR (compounded in arrears or simple SOFR) and will consider an alternative reference rate if appropriate.

Other large firms referenced building a portal on their website and had already reached out to their largest clients in addressing the process.

Firms noted that while this approach may well work to mollify clients who are still awaiting a more indicative reference rate choice by the industry, this does push forward important steps that we will need to eventually take.

A few study participants noted that some institutions had challenges with specific contract amendments but that was a distinct minority that anticipated their hardwire language to go in place or the runoffs to occur in advance of June 2023. Firms noted that they have tracked statistics carefully for a number of months across their program managers who have reported back that their clients have come around to the amendment process and have structures in place to handle the amendment process if that is required. Finally, larger global banks mentioned that with a half dozen plus months to go that they were curious as to the impact of “re-opening the hood” for the compounding conventions for ARRAs if that was required.

Larger market participants with greater market exposures in the end were pleased with their progress in the number of contracts that had been executed the past year that referenced SOFR and/or and hardwire fallbacks.

Participants broadly agreed that hardwire approaches had progressed further with derivative instruments since they were implicit and addressed via the ISDA protocol. In summary: strong progress; still work to do on the lending side; concerns on the timetable for implementation of language for ARRAs if that demand arises.

The primary deterrent currently for many institutions (inclusive of regional banks and end-users and small clients) is due to the product uncertainty that continues to engulf the U.S. market. **Institutions are not concerned that the vast majority of their clients doubt the cessation date.** But they agree that for the time being the influx of continued dialogues about potential ARRAs and the introduction the past several months formerly of several Credit Sensitive Rates has only increased that hesitation to close on finalizing remediation efforts. More recently, the added likelihood of a formal endorsement of Term SOFR has only exacerbated the wait-and-see approach for some in the market.

Larger banks shared the view that the failure for SOFR to take hold especially in the lending market to date has been a challenge in remediation progress. Banks noted that “we have already completed our internal work—that’s not the problem—it’s the lack of volume in the market that has created our biggest challenge.” These institutions generally shared the view that the fallbacks will endorse SOFR as the widely accepted replacement for LIBOR along with the hardwire approach and the supplemental amendment process



once market liquidity takes hold. Firms noted that they did not “want to get ahead of themselves” and wanted to focus on the ‘economic piece of the transition--ensuring a well thought through cost benefit approach to the transition.’”

Separately, the release of the ARRC fallback language has highlighted some of the issues associated with legacy contracts and the occasional bumpy path to remediation. Most institutions in our project noted that they were going to address these with ‘BAU practices’ but also will require some customized remediation efforts. The initial challenge of identifying in each business where sufficient fallbacks were not present and evaluating the size of the exposures has been ongoing for several months.

Readiness and Outreach

The current pace of re-papering and remediation outreach is slower in the U.S. than in UK and some other markets globally as many banks have not finalized their RFR offerings and clients may not

have undertaken sufficient contract review and extractions (risk assessments) to confirm their firm-wide exposure to LIBOR in various agreements.

Non-Linear Derivative Solutions

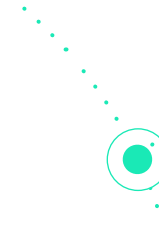
At the time of our publication the industry is still working on various solutions via ISDA for non-linear derivatives. There was limited feedback broadly on the question, as many respondents familiar with the challenge noted that they anticipated additional ISDA language in the market sometime in the next several months. Some banks noted that they recognized the difficulties with finalizing language without a fulsome SOFR market being created.

For constant maturity swaps (CMS) participants noted that they have been discussing these at the ARRC to construct options “best practice” which have been based on the ICE swaps market. To date the answer has been that the fallback language will not apply to either ICE or the Euribor

rates, and we also do not have an automated fallback on the ISDA side. Firms shared the view that CMS was awaiting next steps from drafting into the ISDA protocol and were linked to floating rate notes (FRNs). Lawyers we spoke with felt that Sterling LIBOR was not that far away from a clearer suggested methodology being crystallized. End-users noted that they believe these negotiations are winding down, that language surrounding floors and caps are being looked at and that firms are managing the convexity risk with those instruments.

Federal Legislation on Contract Certainty

Our study focused on both the value of the recently passed New York State legislation on legacy contracts and the proposed Federal legislation that is at its initial stages in the House of Representatives and received testimony from several industry firms and regulators. We also address below the third leg to this stool which is the corresponding UK approaches on legal certainty that



firms also commented upon. **Universally, participating firms agreed that the NY State legislation was very important given the predominance of contracts written under NY law.** Firms noted that this allowed the replacement of patch work approaches and should provide needed certainty for the transition. Firms noted that the legislation would help with corporate trusts but Federal legislation was still required for structured finance and derivative instruments. Federal legislation is important given the proliferation from a dispersed group of lending statutes and useful to enhance the coverage for securitized assets and notes that are not typically covered.

The lack of Trust Indenture act was a major gap identified in the NY legislation and essential to the need for Federal intervention. Some banks noted that they were interested in including it as part of their offering and they would like that to be picked up in the upcoming Federal legislation if possible. Regional institutions added that the exclusion of community bank contracts in isolated jurisdictions could eventually pose a systemic problem for the market. For the larger institutions, portfolios often fall under jurisdictions of NY law but underlying documents have a trust indenture which is not covered.

Use of Automation and NLP as part of their Contract Review and Extraction

Since our first study in 2019 we have asked participants about their use of AI/NLP or similar tools in their contract review and extraction process. We extended that question to include the possible use of AI/NLP in their remediation approaches but there was limited indication that this was favored. A few had engaged outside firms or were using internal technologies to assist with the initial remediation and outreach steps, but most had not considered the technology. Firms regarded these steps to be manual and time consuming and had yet to see tools that would be efficient for those efforts.

Most of our participants acknowledged that they had reviewed AI/NLP options and those with a meaningful number of contracts engaged providers. Some of those were third party consulting firms; others reached out to external law firms and many also found expertise in specialty automation firms who provided high end delivery for a wide variety of use cases. There was a fourth group who leveraged current digitization efforts that had already been employed by the bank for prior initiatives. After reviewing our data over the past two years, we believe that many of the largest global banks, many of the U.S. regional banks and numerous foreign banks embraced one of these four solutions which included automation as a key component of their review and extraction of contracts related to the transition. Some of our largest end-user study participants followed suit. A segment of those institutions we spoke with agreed that some products were too complex to be captured by their product including CLO's or bank loans as examples.

We noted in this study that some firms clarified that they had engaged a third-party provider who by proxy was using AI as part of their review approach. Finally, others noted that their third-party vendors were used for only inventory management as opposed to the entire review.

The use of digitization was pronounced among many in our study and was beneficial to learn key word tools which were then handed off to others for legal review. This reduced time to a certain extent but there was still significant manual work required. One firm commented "we loaded all of our contracts to an AI solution; built a script for LIBOR that used the tool; customized for the library and found a law firm that could use both and provide external advice."



Regulatory.

Regulatory scrutiny has differed markedly from the US vs. other jurisdictions. A larger spring/summer push by US regulatory bodies, joined by the FCA, reflect to date a singular commitment to SOFR as the transition RFR—promised safety & soundness reviews to achieve those goals. Increased oversight is anticipated in Q3 and Q4 as the process evolves.

Official Sector Roles and Responsibilities

Since we initiated these projects, core to the discussion among the participants has been at least the perception, and for most the reality, a distinctly different approach undertaken in the US vs. UK and other geographies towards the transition. As a result, the feedback from the beginning of our work, has been split along geographic lines—differing thoughts about the appropriate role of regulators to standard set or influence the transition in their locale and, eventually, whether the examination process would have the necessary rigor to encourage firms to meet transition deadlines and meet better/best practices.

Those sentiments were re-echoed in this study as participants noted that, looking backwards, participants did believe that the US structure provided a sufficient balance among the largest institutions and regional/community banks as well as appropriately engaging the corporate community early in the process. The opinions on what should have occurred were straightforward. One global bank noted that the “PRA and FCA have been very direct in their perspective including data gathering and rigorous oversight guidance and this has not been matched by the Federal Reserve to date.” Others noted that the “delay the US has agreed to kicks the can down the road—the messaging has been in speeches vs. action. FR 21-7 is a step in the right direction—enhanced scrutiny and consequences for the lack of progress.”

Separately in our discussions, firms noted that the messaging and the pace associated with the timelines (which were different) caused unique challenges. One of the larger buy side firms commented that “we are working towards our transition for GDP LIBOR this year and we are aware that the pressure from the FCA on UK institutions also finds its way to our efforts since they are pushing us to be further along than their US counterparts.” A European based fund manager commented that “with two different implementation dates items can be problematic. Many of our counterparties are European based and we are seeing real movement and progress with them whereas we are seeing less movement among our US entities.”

This tone and tenor were mirrored by banks who noted that the lack of regulatory pressure is leading to stagnation from their clients. One foreign bank noted that this was the continuation of “less clarity and less analysis leading to paralysis from our counterparties. The urgency for the transition was reduced; the commitment to SOFR and the appetite to clarify that positioning has not been helpful especially with ‘new toys’ coming out for institutions to consider.”

Finally, we note that only a few firms properly noted the global role of the FCA as the regulator charged with the oversight for the LIBOR transition and often assumed that the Federal Reserve or others had equivalent power.

From the beginning of our studies, we have found most global banks reflecting a desire for a more pro-ac-

tive regulatory effort in the U.S. that mirrored what they had encountered in the UK.

Regulatory Examination Process

Some firms had very high touch discussions with their regulatory bodies and others something more structured. Some noted that they anticipated further scrutiny during Q3 and Q4 while others had not received a clear direction on next steps.

U.S. firms did not see the efforts as very proactive, and one noted that they could not describe what the OCC remit really was. Another noted that the OCC had been “very hands off and not in lock step with the ARRC. They generally seem to favor market autonomy and focus on price transparency. We would not mind them trying to produce more rigor and level the playing field with the Fed.” Some of the institutions noted that they took the questionnaire “turned into their own risk assessment and sent it to stakeholders who were responsible, and we went through a self-assessment and a good health check.”

SEC

Firms noted that the base responsibility for the SEC oversight was almost all disclosure-based although firms recognized that this could change under the direction of Gary Gensler, the new SEC Chairman.

Large banking institutions commented that “they did not think that the SEC would have impact one way or another.” Another noted that “more disclosure would not change anything.” A third bank commented that “we have not read nor heard or have any indication that this is a concern of the SEC. There was no gun or hammer in their



hands, nor do they have authority to accomplish that.”

Institutions were generally skeptical that the breadth of the SEC capabilities would change the dynamic for financial or corporate end-users to hasten the transition process, although the tone has clearly changed as of June and Gensler’s team taking the reins. There is a bit of “TBD”.

Federal Reserve Examinations

Over the past six months the Federal Reserve have provided significantly greater guidance to regulated entities regarding expectations for the LIBOR Transition. The Fed was seen as the most engaged regulator for the transition. Firms in our study had reviewed SR-21 among other documents and had more likely than not already engaged the Fed regarding the transition and had formed a view (however preliminary) about the level of scrutiny.

Regional banks felt they were ready for the Fed’s review and had already answered the initial set of questions and had established quarterly touchpoints. Others commented that they had strong confidence that they had reviewed the SR letter and bulle-

tins, were not “freaked out” and were comfortable with their timelines and could demonstrate to their management that they were in good shape. A global bank noted that they had put special attention on their system readiness and joined other banks in noting that there were “no surprises and were on track for the transition.”

We also engaged some firms on their interactions with the New York Department of Financial Services who had originally issued their transition update request in December 2019, which at the time provided meaningful concern in the market. Several firms noted that they found it unusual that they had not heard from the DFS since the 2019. Finally, a group of our Canadian participants commented that they had engaged OSFI in Canada who have reached out regarding progress on the transition, and they all felt that additional activity and an uptick in scrutiny would be welcomed.

Role of the Second & Third Lines of Defense in the Transition

Larger regional banks and GSIB’s echoed the same themes: the “second and third lines were engaged from the start; governance meetings; model va-

lidation all at the table with their work plans.

One of our larger regional banks noted what typified a few the bigger banks. They commented that the “second and third lines were engaged from the start; governance meetings; model validation all at the table with their work plans. Our program was audited, and they are part of our ongoing practice approach now.” An international G-SIB said “that all of our proposals and new origination have engaged with compliance and conduct working groups providing consistent market practice. Our second line is imbedded with our controls and close to all new originations.” A large financial end-user said that “our second line groups prepared and were involved with compliance, legal and risk and those representatives are tied to internal audit wholistically throughout the firm.” An asset manager commented that their IA has called but not audited the project and we anticipate that they will wait till the project management is done and system changes. Our second line has been involved all along.” The concept of internal audit ‘observing and not having an in-depth review of our practices—they have been passive and less engaged’ was voiced by an end-user who sensed they would want to upgrade their efforts.

We attempted to probe the role of internal audit and the interaction with partnering and the role in decision-making with the Steering Committees. A perspective was provided by a larger regional bank who commented that “our internal audit partnered through the whole way—releases governance monitoring and evaluated the work we have done; coding on our fallback language that was also reviewed externally and regulatory reviews. They have used ARRC best practices as a reference but not as a tight benchmark.” An investment entity said that their internal audit looked at governance structure but has not done a full-blown review and risk sits on the committee along with audit which is a stakeholder.”



Alternative Reference Rates Replacing LIBOR.

Participants in our study spent considerable time discussing the current poor liquidity tick-up in SOFR across both derivatives and cash; the potential role for Term SOFR to build out those figures and enhanced regulatory approvals for the inter-dealer market to increase investor/end user participation. There was strong and divisive dialogue around Credit Sensitive Rates of all types and the potential contributions they could bring to the market which will ensure even a larger global 'multi-rate' environment.

Market Messaging and Competition Between Reference Rates

Over the past several weeks, we have seen commentary from the various U.S. and UK regulatory bodies aligning support behind "SOFR & SONIA First." Additionally, there has been commentary clearly providing support for Term SOFR with the expectation that its adoption would bring further liquidity into the market once that product is given additional approvals. Interviews in June the content of which align with dialogues held several months ago, reflect the desire from the industry for a set of answers in the U.S. If term SOFR can effectively address those questions, that would further spur adoption by institutions and clients.

Developments over the past month have included clarification about commitments from a number of individuals and entities concerning focusing on SOFR as the only acceptable RFR that could be implemented, as well as a series of statements which included very strident commentary from SEC Chairman Gensler regarding CSR's as being unacceptable alternatives to SOFR although they could or should have arrived at those options much more quickly.

A regional bank suggested that "we are doing operational readiness to support other rates like AMERIBOR

to determine our readiness." A global G-SIB was quite succinct: "we need a settling of the market. Do we have a Term SOFR settling on the options and different flavors with lookbacks and averaging in arrears (as that will be very challenging) which executing is going to be very challenging? To the extent that there are going to be CSR's, which ones will be selected? What are they? Are they of the magnitude that they can compete with SOFR for liquid derivatives, or are they a 'niche' that occupies a not so widespread portion of the market and are actually competing for market share? Will BSBY be on the periphery or core to the market?"

Whether this 'wait and see' is either short term perception or reality, we believe respondents believe it will take a while to play out through year end. They have commented both in past studies, and with passion in this document, that the fungibility needed to end and certainty expanded. One of our larger end-user participants commented, "one of the items we have talked about is flexibility and different end-users have different capabilities and products and we will try to be methodical in our review—but we will wait until we see what our customers want and move where we need to move. But we are preparing now for multiple rates, with CSR's and other indices and processes required."

There are very fervent supporters of one or more of the Credit Sensitive Rates. One of those firms commented, "BSBY appears to have some early traction with some G-SIB backing and we would support BSBY emerging as a viable credit sensitive term rate for commercial lending. We anticipate the ARRC recommending Term SOFR this year and if the ARRC acts soon then Term could supplant Daily SOFR as another viable rate in the commercial loan market. **We do expect multiple rates to replace LIBOR for new issuance and we think the two most prevalent reference rates for new issuance in lending will be Term SOFR and BSBY.** However, this is just our speculation and many contingencies could derail this.

One European bank with a small U.S. presence said that "it's important to understand why markets lead; if a rate has demand it is very difficult to turn it down, whether it's AMERIBOR or SOFR or Fed Fund Rates or another CSR. They will all come down to changing the tone. If no bank wants to offer a term market, BSBY will gain traction. Regulators right now are staking the moral high ground, so this is difficult to speculate and we are not writing about this to our clients." This view was shared by another larger global bank when they stated, "it is too soon to say [what product will emerge as a front runner]. There has been buzz on BSBY and it has gained some early traction. As there is Term SOFR, as well as five viable alternatives, it is a bit early to call that. There has not yet been guidance from the official sector. It took a long time to build SOFR to meet the needs of the client. We are surprised by the Fed's silence, and we know our clients want a term rate. It will be hard to put that demand genie back in the bottle."

A large asset manager commented that “with greater fragmentation it will be tougher to move the market. More people are confused and if SOFR moves forward then some of the choices will create logjams. We think we need to seriously consider narrowing the offerings. The Fed is in an interesting position, but the Fed needs to decide how to use BSBY for products like commercial real estate where liquidity is not that important.”

SOFR Volumes and the Global Pace

The comparison of SOFR and SONIA, volumes and otherwise, at root, are not comparable. One of the senior traders at a G-SIB noted that “roughly 50% of the client volume had already shifted to SONIA when the UK initiative launched, compared to around 15% on SOFR. How quickly the client piece of the market moves on the back of a “SOFR First” initiative is something we will need to continue to understand.” Janet Yellen, in her presentation on June 11th at the FSOC group meeting added that “while important progress is being made in some segments of the market, other segments, including business loans, are well behind where they should be”.

There has been strong growth in SOFR futures volumes year-over year from June 2020 to June 2021, but that was on very low volume. Andrew Bailey has enthusiastically supported this effort, noting that new Sterling FRN issuance almost exclusively references SONIA. The share of SONIA referencing swaps has exceeded the LIBOR equivalent now for 10 months, and the dealer-to-dealer market has completed a transformation in risk traded with 70% more volume in SONIA as compared to LIBOR across all tenors.

As we referenced in other segments of the document, the UK took a focused and steady approach to the implementation of SONIA as the replacement rate, and the current status of the rate in the market seems to reflect that long planned effort. Most recently, in late June, Ford appeared prepared to refinance \$15.4 billion in

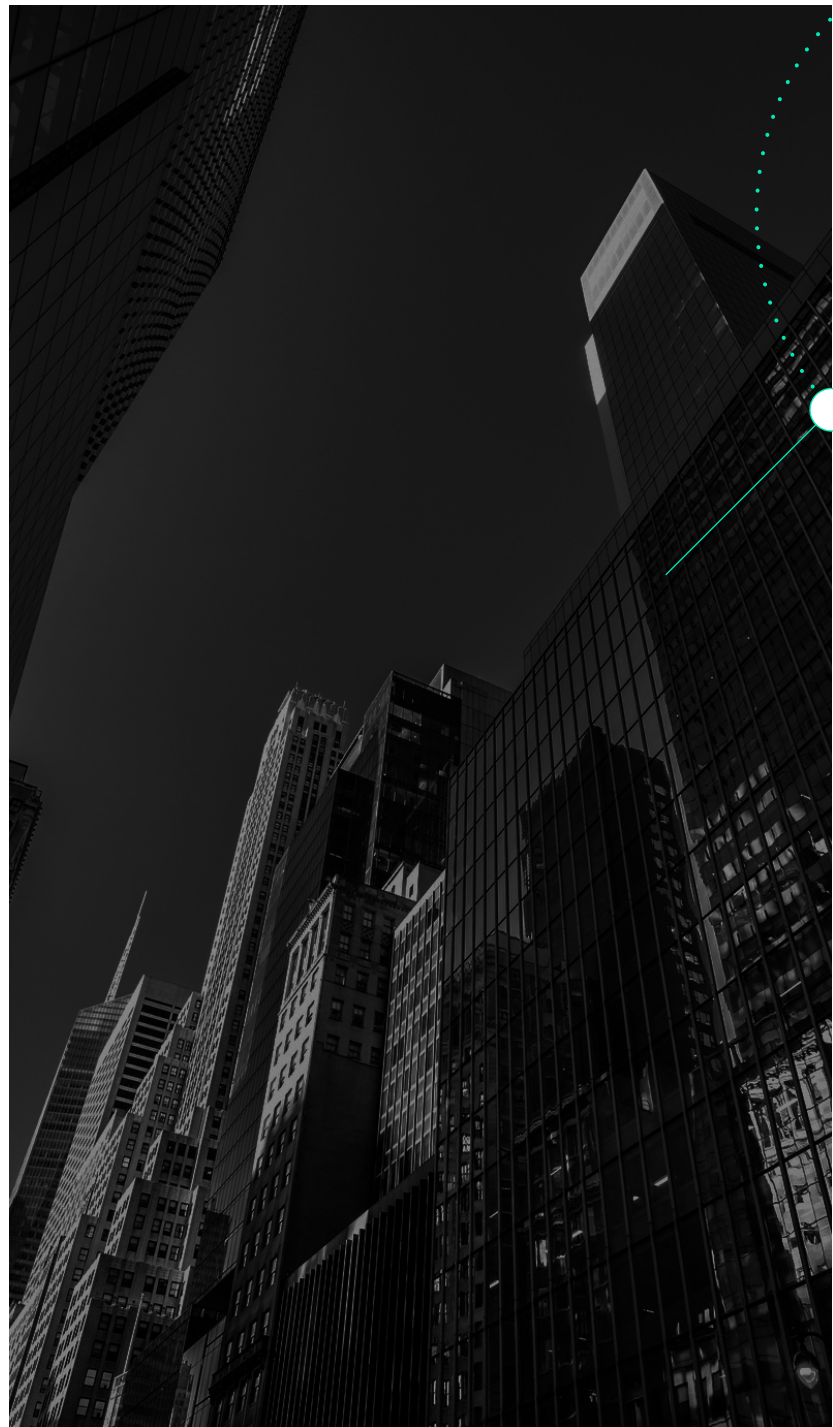
syndicated facilities and do at least some of them on SOFR which appears to be the first broad syndicated multi-billion-dollar US based SOFR loan being originated on an RFR other than LIBOR. The loan would be calculated by ‘Simple SOFR’ and hence not compounded by the outstanding principal.

SOFR Compounded in Arrears: Challenges and Complexities

The largest participants in our project indicated that they would be prepared across systems, operations, risk, and other support infrastructure to make

the necessary changes to adopt SOFR compounded in arrears. Respondents reported that they are now, or will shortly be, prepared to transition as required. However, they also noted that a number of their smaller/mid-size peers in the market are not able to make those investments (or would choose not to) as well as that numerous clients on the cash & lending side would not embrace this approach.

A smaller U.S. Regional Bank was more explicit about the challenges when they noted, that “our problems include option-based pricing; a tranche in SOFR vs a tranche in prime-pricing,



which is forward vs. arrears. How do you deal with those deals and how do we solve for that? We have a lot of head crashing. We can offer simple SOFR and can meet those requirements. However, as a lender we are skeptical that we can offer a robust compound in arrears—spread differences in pennies and the challenges for interest and lookbacks are more complicated than it needs to be.” A larger U.S. regional noted, “there are two flavors of SOFR: in arrears and compounded in advance. Borrowers want compounded in advance. Banks would not offer that at all. The conversation taking place over the past month that CSRs could bridge that gap by having the term component is something everyone can agree on.

The client component here cannot be denied. A midsized regional bank highlighted that a number of their peers have identified that “customers would take SOFR until the customer understood compounding and the true up period. Then they would take BSBY”. They continued, “with AMERIBOR and BSBY they should be relatively easy to implement. The calculation methods with SOFR compounded forward and backward are so much more complex.” This view was shared by a large U.S. G-SIB who noted the juxtaposition of the addition of Term SOFR, saying “the CME announcement changes the game. Derivative markets are comfortable to trade in compounding in arrears. CME solves the issues on the cash side.”

Many of the regional banks in our study noted that their infrastructure upgrades associated with SOFR compounded in arrears were meaningful investments to ensure transition readiness even if they were anticipating additional credit sensitive rates. One of the investor end users has publicly noted their skepticism, stating “SOFR is really designed for large institutions doing a ton of overnight repo as it allows them to hedge their books perfectly, but it’s not – in my opinion – a great option for a commercial loan given the daily nature of it, the compounding issues and the fact that it’s a risk-free rate.” These views were shared by

banks who had interacted with their clients. One regional bank noted that “this is concerning to our customers. The average two-day event you get noise, which is a natural reaction. We have put it into sales and training materials—and they do not know the SOFR rate so they will have trouble with daily adjusting rates—so billing will be challenging. Another regional bank who favors options said, “there is a demonstrated need for a CSR in the lending space. SOFR is an option and will be viable. However, mechanically clients want to know something before the end of the month for planning and SOFR does not provide that.”

Remaining Growth Concerns

Almost all institutions we spoke with said that they felt that the U.S. should be further along and noted issues ranging from momentum to operational hiccups to failure to properly message to the competition in the industry from CSRs. Others noted that “while there are operational and

legal difficulties, we need to face the reality that we have six+ months and the amount of work to get done is a lot. That is our major concern. A larger global G-SIB expressed the view of other European-based institutions when they noted that moving the implementation date “has given us more time, but we are not seeing new SOFR transactions on the lending side as a result.”

SOFR First Next Steps

For background, the “SOFR First” initiative, which was announced on June 8th, was a cooperative dialogue lead by the ARRC and U.S. regulatory bodies which called on the inter-dealer brokers to switch U.S. dollar swap quoting conventions to SOFR, which was then more officially articulated by the CFTC’s Market Risk Advisory Committee.

MRAC noted that the purpose of this effort was to bolster the “disappointing liquidity in the Federal Reserve’s preferred LIBOR successor (SOFR). A number of traders spoke out favorably about this effort, as one noted that “there





is clear guidance to move away from LIBOR in the derivatives market by the end of the year and reality is that an initiative like “SOFR First” is probably the only way to get there.” Another G-SIB senior trader succinctly noted that “the market definitely needs this one-time boost to get out of this chicken and egg dynamic.” Most recently the FHFA articulated a detailed regulatory guidance related to the LIBOR Transition. The letter shared by the ARRC on July 1st was issued for the Federal Home Loans Banks to support a smooth transition away from USD LIBOR. The letter encourages the continued use of SOFR and SOFR averages and warns against the adoption of rates that have similar shortcomings as those associated with LIBOR. (supervisory letter)

Term SOFR

Initially in March, the ARRC announced that they did not believe they would be in a position to recommend a forward looking Secured Overnight Financing Rate (SOFR) term rate by mid-2021, and encouraged market participants to continue to transition from LIBOR using the tools available now. This feedback was exceptionally troublesome to the industry and indeed we picked this up at the very outset of this project with our initial interviews. Institutions felt it was important to secure sufficient SOFR wide liquidity that a term structure be included. And it was one of a group of topics that broadly was supported

across almost all types of banks and both corporate and non-bank financial institutions. Those concerns were aired quite rapidly and after further consultation with the markets there was a complete change of heart announcing on April 20th that, when they noted “As we announced in the March statement, the ARRC will continue to work quickly to communicate what it considers to be the necessary conditions to substantiate the recommendation of a SOFR term rate, including the development of sufficient liquidity in SOFR derivatives markets and recommendations for an appropriate scope of use for the term rate. This feedback was welcomed although with a few reservations.

One G-SIB commented that “the volume for SOFR is in the overnight rate. That needs to be greater than Term SOFR for this to succeed.” A regional bank suggested “once derivatives are green lighted on the CME/Term SOFR, this interplay will be sufficient volume for SOFR futures. Conventions will help and increase volume. However, we are not sure about the timing on the ARRC and we would like to use it with cash products and derivatives together by Q4.” A stronger advocate of CSR’s was leery when they noted “we don’t see a lot of interest in CME Term SOFR without the ARRC seal of approval as participants don’t want to be offside of the eventual recommendation.” A separate G-SIB reflection in late June offered that the “CFTC announcement on the inter-dealer market, will drive

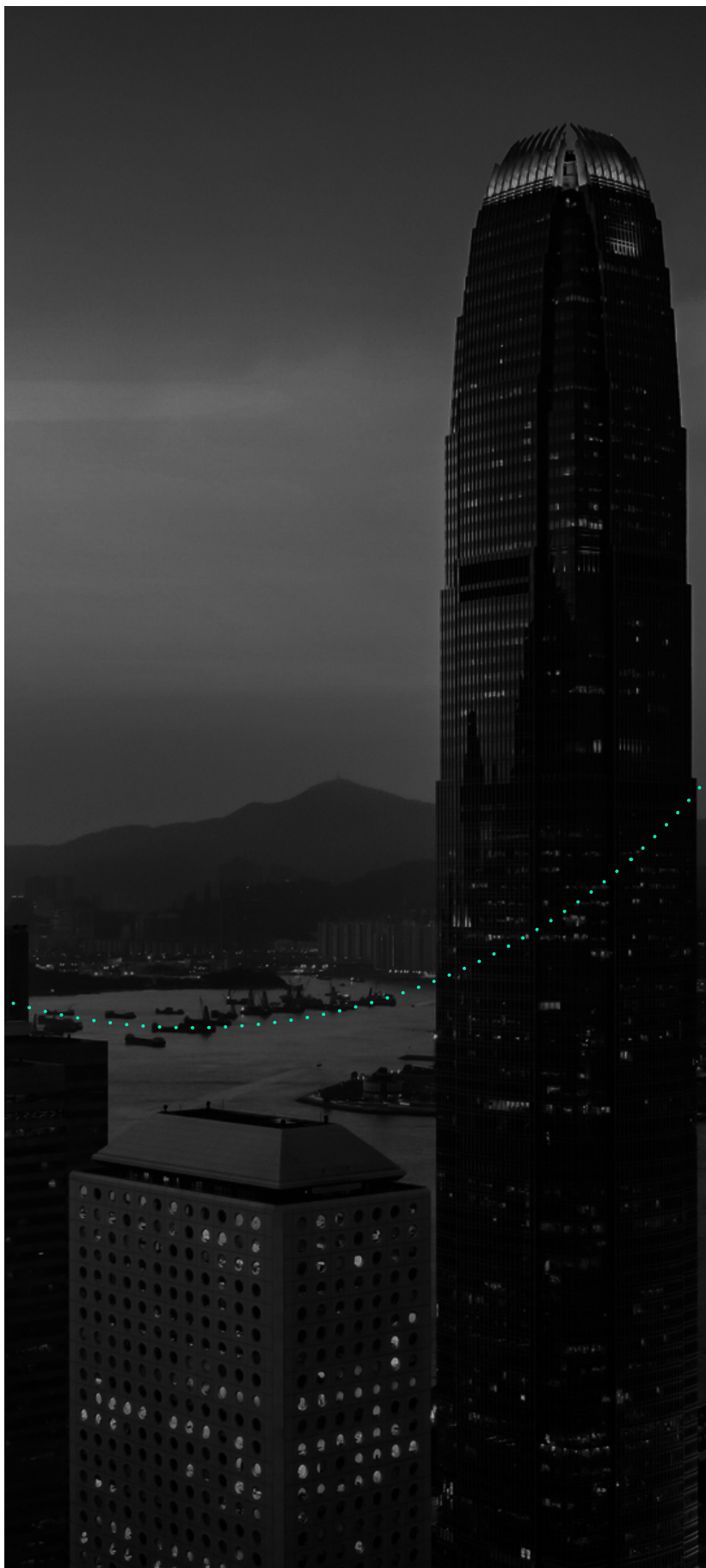
liquidity and recommend that the CME is the Term SOFR provider. We think that clients should follow and, by year end or we move away from LIBOR. It will work well with SONIA—triggers do exist—but they are really into 2023 to get that done.”

Participants had reasonably clear views on the value of the term proposition and where it would be useful in pumping the growth of the SOFR market. **Some, as noted, were concerned with the trade off with CSR products but admitted that this discussion was still in its infancy.**

‘SOFR First’ and Term SOFR

For several years institutions have been actively advocating the recognition of Term SOFR. However, the linkages implicit or explicit of Term SOFR with ‘SOFR First’ and its linkage was laid bare by ARRC Chairman Tom Wipf who said, “the linkage between ‘SOFR First’ and Term SOFR is very tight and if we can deliver on ‘SOFR First’ with the recommendation of the MRAC subcommittee, I think the ARRC will be well positioned in days, not weeks, following that July 26th date to endorse CME Term SOFR.” The ARRC’s formal endorsement is nearly assured at that meeting providing an additional level of assurance for industry participants who find the offering attractive.

Our study participants noted that if one reviews the progress made based on SONIA adoption the success for SOFR could be rapid. One trader noted that “if we look at the UK experience, and you get 30-50% volume on SOFR in the first couple of months is possible. That is a meaningful chunk of the market when it has been hovering around single digits for a long time. This should be an orderly move and not a shock at the end of the year.” That jump in volume would be considerable as some of our charts point to. “There’s no doubt that the pace of SOFR adoption has been disappointing. Given that there’s less than seven months to go until the business has to be off LIBOR, and we are only at about 7% of the derivatives



markets, it is concerning, as one senior trader noted.

Traders seemed keen to move this along, as noted by one senior trader who commented “Market participants are keen to follow these best practices because getting SOFR indoctrinated into our market is in everyone’s best interests and I think everyone will do their best to make this happen.”

Switching the pricing curve for inter-bank markets could also entice more client activity by reducing friction costs on SOFR trades some of our study participants noted. **By cementing SOFR as the primary rate on broker screens, dealers will begin using the risk-free rate as the base curve for viewing and hedging risk, meaning they would no longer need to hedge a client SOFR trade with a basis swap.** These cost savings could be passed to the client in the form of tighter pricing.

There are caution flags on the applicability of TERM SOFR. First, at the release of our paper there are no *current plans to offer derivatives to their own CME Term Rate until June 2023, leaving it far more applicable to legacy agreements although the hope is that evolves.* Second, there are separate hedging concerns on the use of Term SOFR which is built on the derivative itself. Market participants noted that this could create hedging challenges and basis risk.

We sensed checked this several times the past few weeks in June was sent to the participants. One noted that the outcome of the FSOC meeting included a series of reactions. **Client feedback for this institution suggested that clients/sponsors had put a hold on discussions on CSRs including BSBY and AMERIBOR.** They emphasized that the long-held view that most of the larger corporate and financial end-users ‘just want this over with’ was confirmed after the FSOC feedback. The debate surrounding the future of ‘SOFR First’ and the role of other alternative rates is likely far from over with protagonists on both sides who want further dialogue both within the industry and with the official sector globally especially in the U.S.

Discounting

The issue for discounting and its applicability for banks trade finance businesses was flagged often throughout the study and by foreign banking organizations who, in particular had large global businesses impacted by the transition.

One larger international G-SIB suggested that “we answered the consultative document last year and noted that a term rate for discounting is important for trade finance products for the primary and secondary markets for discounting and term is absolutely necessary. All the asset classes with values gradient such as mortgages and FRN’s that we are buying and issuing and in between loans securitization structures and major chunks of activities in trade are crucial to get fair pricing and discounting. We would need another solution if we did not get term.” An insurance investment manager commented that “discounting for derivatives went to a SOFR curve and nothing happened. Legacy paper produced no volume. Term Structure is what people are waiting for. Term SOFR has always been in the cards in the US and until that happens you will not see volume.”

What was broadly clear in all our discussions is that Term SOFR however will not solve all ills and would often be directed at the lenders market who also want CSRs considered. An investment entity commented that “Term SOFR hypothetically is linked to lender banks and those big banks sell futures on a re-set date. Which makes them vulnerable. The regulators are not enthused about that since they do not know what will happen when things get bumpy, or the markets are jumping all over the place which is what we care about. This index cannot be approved until robustness is determined or the Fed owns Term SOFR like the way they are managing SOFR in arrears and the Fed could produce the rate themselves.” One of our regional bank participants clarified that “Term SOFR solves one but not both problems with SOFR (overnight vs term and lack of

credit component). So, to offer a Term SOFR, product lenders will likely need to determine a credit spread to the margin which increases the complexity of using Term SOFR.”

The long-term viability if there is a trade-off between the emergence of Term SOFR and the discussion around CSRs was highlighted by one of our participating regional banks after the June FSOC meetings when they suggested, “we think in the long term, assuming CSRs survive, that pricing becomes the differentiator rather than term structure. Credit sensitivity can either exist in the benchmark or in the credit margin where credit is priced much higher in stress with CSR’s or less high through the cycle with SOFR. As a result, CSRs could wither on the vine before that pricing differential becomes apparent. Currently, we do not see good credit pricing of SOFR but that will eventually be a necessity, even if it takes until the next fiscal stress cycle.

The systemic issues surrounding these various rates are still being vetted but it was top of mind for many of the participants. One of our regional banks questioned, “what happens in the case of a crisis? Markets are so thin and there are smaller data sets that change the behavior. If there is, for example, a decent amount of BSBY Commercial Paper that feeds into the market there is not much margin for error underpinning that product. However, for the SOFR futures market, that is the basis for the derivatives market and that is a much bigger base and, conceptually, around to stay.” Another regional player commented that “CSR’s will evolve and co-exist with various forms of SOFR, but it feels like the inertia is towards SOFR without a doubt for legacy portfolios.”

Recent Regulatory Commentary on CSR’s and Term SOFR

One of the challenges in drafting and completing this paper has been the steady drumbeat of updated news from the official sector and the corresponding feedback from the industry.

Consequently, we ran a small set of ‘third interviews’ the week of June 14th and June 21st before issuing the paper to ensure some balance in our feedback. The discussions at the June 11th FSOC Meeting crystallized the desire of U.S. Regulatory bodies, joined by many in the UK, to support the “SOFR First” initiative and, as a result, either implicitly or explicitly (SEC Chairman Gary Gensler) call into question the validity of CSR’s. As one would have expected, that produced a response from the markets, who at least in part, are quite supportive of these efforts to provide alternatives.

Historically, both the U.S. and UK regulators have argued either in private and occasionally in the public arena that they would strongly prefer to have a commitment to all things SOFR (and SONIA). In early May, John Williams, President of the FBNY, noted that regulators would be comfortable with a multi-rate environment, providing it was built on a solid SOFR foundation. Andrew Bailey from the Bank of England had separately warned that in the UK firms regulated by the PRA who might be guilty of “lazy” behaviors in unnecessarily sustaining LIBOR linked contracts will be treated in the same way as firms demonstrating any other risk management or governance failings. Similar ‘safety and soundness’ commentary had been echoed by others in the U.S. though slightly less explicitly. At the June 11th meeting of FSOC there was commentary reflecting the likely supplementation of an officially recognized Term SOFR to assist with the anticipated boon of liquidity and, for good measure, a speech directed at the shortcomings of BSBY in the eyes of SEC Chairman Gary Gensler. Both the Bank of England and FCA have issued statements encouraging liquidity providers and other market participants to switch from USD LIBOR to SOFR in the USD interest rate markets by late July. Those views were corroborated by the CFTC’s EMRAC subcommittee recommending interdealers brokers change their USD linear swaps trading conventions by July 26th. And the FCA noted that engagement with UK

market participants in the USD market found strong support for that change in the interdealer trading conventions, a conclusion we felt that was shared by our European participants.

The strength of this conviction of the official sector carried into July when the FCA weighed in on the lack of appropriate fit for this product. Edwin Schooling Latter commented at a July 5th conference that, “we don’t want to see transition to new so-called ‘credit sensitive’ rates such as Bloomberg’s Short Term Bank Yield index – known as BSBY – that some have suggested as a possible successor to Libor in some contracts.” He continued in his presentation, these CSR’s share many of the same flaws as Libor. That’s because they are derived largely from transactions in Commercial Paper (CP) and Certificate of Deposit markets. Yet liquidity in those markets has not proved robust to stress, as we saw vividly in March last year, when liquidity in CP markets dried up, and yields spiked.” Of greatest importance is that the UK clearly intends to monitor the use of future utilization of CSR’s as Schooling noted “We ask that any regulated UK market participants looking to use these so-called ‘credit sensitive’ rates in UK-based business consider the risks carefully, and raise with their FCA supervisors before doing so.” To date this is a *meaningful departure from the US regulatory stance on CSR’s who have yet to provide any formal comment on the approval for any of these offerings let alone an indication of how bank examiners would treat an institution who has a meaningful percentage of any alternative rate in their transition outside of SOFR.*

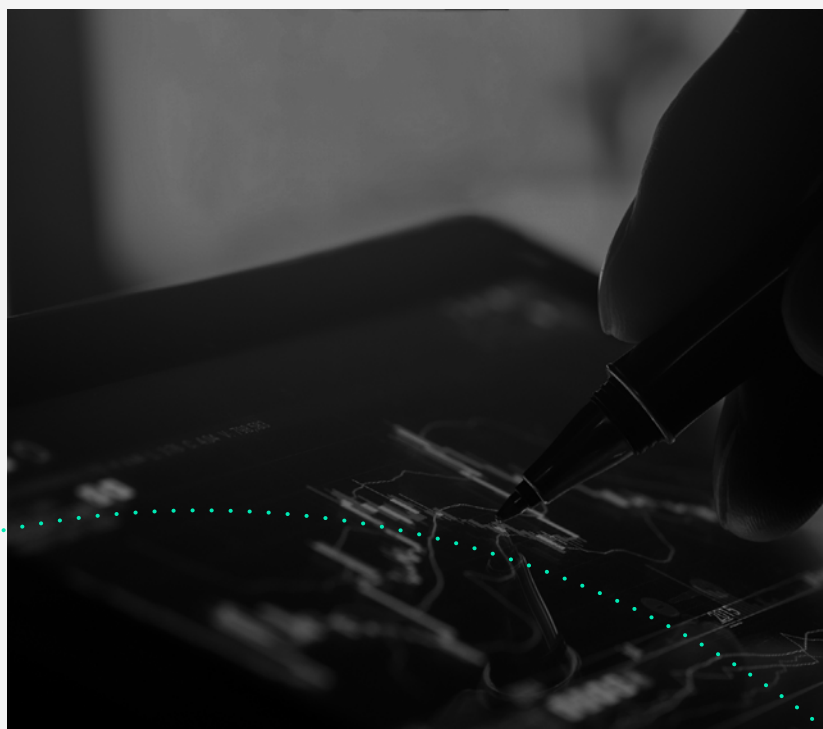
It is worth noting that the industry is in near total agreement on the cessation dates—the movement away from LIBOR—but less agreement on moving to what replacement rate in the USD market. One regional bank commented

that “ARRC’s involvement in Term SOFR makes it more challenging to front run an official recommendation. If you pick up on the CME Term SOFR recommended, and you started issuing in Term SOFR you could be in trouble. You are doing it without a recommendation vs. a blank sheet of paper which is a state of play.” A global G-SIB in the last week shared that “effectively the CFTC announcement will drive liquidity and be assisted by the recommendation that the CME is the Term SOFR provider. By year end or early next year, as we move away from LIBOR except for risk reducing trades, we would anticipate seeing that momentum.”

A G-SIB noted that “overall the aims of the U.S. regulatory bodies and the FCA with enforcing market guidance are not very different. The FCA and the PRA have actively imbedded into the process and the Fed is singing on the same hymn sheet. The initial reluctance of the Fed to endorse a forward rate was frustrating to some as one of the G-SIB’s commented, “everyone believes we need a forward rate and apparently there will be one according to the ARRC. The CME Strip is IOSCO compliant and gives you a forward point out to a year. This would be a viable option

to the market. We felt that the ARRC and Fed occasionally had their own silos themselves and were disjointed. It will be utilized—the market just wants a revised LIBOR, and the Fed cannot allow us to fail.” At a recent Bloomberg program on June 29th numerous firms were unanimous decrying the “11th hour discussions when we should be transitioning away from LIBOR.” Others reiterated the views cast in our study that we will be in a multi-rate environment which will have components of credit sensitive rates existing alongside SOFR.” A poll at that event found that roughly a third of the respondents thought SOFR compounded in arrears would be used in derivatives and lower in cash products; Term SOFR would be used for cash products and only a slightly smaller percentage thought SOFR compounded in arrears would very rarely be used. Market leaders from the UK noted as they did in our study that the transition should have been market lead for a customized solutions but the lack of liquidity on SOFR has created a vacuum.

Numerous institutions conveyed similar convictions across the Global banks: please step up the supervisory prescriptive measures and try to



get the most influential actors in the transition and move it as quickly as possible without market disruption.

“Other banks noted that while they anticipated a multi-rate U.S. rate environment to replace LIBOR they were concerned about the “preparation operationally to distribute those. What challenges are you encountering from treasury to the trading desks? We will not want to endorse optimally until the markets have chosen. Traders at some of the banks shared the view that the regulators’ comments in the past have only served to inject more confusion and uncertainty into the market while the business needs to be off LIBOR.”

SONIA Background

In October 2020, ‘SONIA first’ saw quoting conventions for Sterling linear swaps switch from LIBOR to the Sterling overnight index average. Three months after operationalizing, the monthly share of Sterling swaps notional referencing the SONIA RFR jumped from 33% to 44%. Within five months, SONIA had become the dominant benchmark for trades expiring after 2021 - when Sterling LIBOR will cease alongside three other currency settings.

The SONIA First initiative saw the interdealer swap conventions flip from LIBOR to the Sterling overnight index average, or SONIA, last October. This cemented the RFR as the dominant Sterling swaps benchmark within just three months. However, SONIA represented around 30% of Sterling swap

volume when the UK initiative took effect, meaning the U.S. has a bigger mountain to climb and only a short window for participants to kick their LIBOR habit. Several bankers noted that the success of the ‘SONIA first’ initiative was at least due partly to the Sterling market’s ability to build activity in the risk-free rate while maintaining liquidity in the legacy LIBOR rate. Institutions and regulators did express a few concerns about the process. One larger global G-SIB commented that “we do not have live transactions to test ourselves at a scale working on operational readiness for systems for loans and derivatives lack of volume executed on Sterling LIBOR in the UK. We are further ahead with SONIA derivatives and certainly term SONIA is further ahead as a way that could move forward.” They continued, that “there are not that many items for us to manage with the transition moving date. Our challenge is that we have not seen new SOFR transactions on the lending side, but we have already done our internal work.”

Comparative SONIA and Other RFR Market Usage

On Thursday, June 17th, the ICE Futures Europe, the largest UK interest rates market, had a record day for trading contracts based on the new UK alternative to LIBOR as firms switched to SONIA for pricing their derivatives at the request of the British regulator and central bank. That single day volume topped 473,000 lots. The ICE release

noted that the five-day average daily volume for the SONIA futures contract is now above 175,000 lots, also a record, equivalent to a notional value of £175 million.

The ISDA Monthly charts provided some useful comparisons in work they do with Clarus and their IFR Adaptor Figures out in June:

The percentage of trading activity in SOFR was 6.9% of total USD IRD DV01 transacted in May, down from 7.5% the prior month.

GBP saw the largest percentage of RFR-linked IRD trading activity, totaling 54.9% of total GBP IRD DV01.

EUR had the highest percentage of RFR-linked IRD DV01 executed as transactions with tenors longer than two years.

For the week ended June 25, 2021, SOFR had traded 11,417 times, including 3,923 basis swaps, for a total notional amount of \$1.7 trillion year-to-date. Comparatively, SONIA had traded 33,868 times, including 701 basis swaps, for a total notional amount of \$7.1 trillion over the same time. SARON, TONA, and €STR traded 224 times, 457 times, and 695 times, for total notional values of \$17.3 billion, \$143.7 billion, and \$131.4 billion over the same time, respectively. China’s Depository-institutions repo rate has seen a daily trading base exceeding 1.8 trillion-yuan, accounting for 48% of the interbank repo market in the country.

Term Sonia

Consistent with commentary from our global banks the focus/enthusiasm on Term SONIA was substantially more muted than Term SOFR. The UK provisioning on conduct risk and related matters will ensure a scrutiny that will at least short-moderate term temper substantive use of the product were there demand. There was as we suggested at the outset a general level of comfort very early on in the UK market with the use of SONIA as currently structured which has both minimized the interest in a Term Structure or other alternatives.

Firms also voiced that in the local UK markets there was not much of an appetite to add additional system/operational investments. The feedback that was prompted did not suggest numerous alternative threads to share.

Credit Sensitive Rates: Possible Alternatives to SOFR

In deference to the discussions occurring in the industry we wanted to devote a meaningful portion of our final summary and document to the alternative reference rates. Two of those receiving a greater level of focus that were 'first to market' were AMERIBOR and Bloomberg's BSBY. Hence the greatest level of feedback we have received revolved around those two offerings. Two additional rates to the market were IHS Markit's CRITR and CRITS and AXI, which is the Across the Curve Credit Spread Index. There was limited feedback on the last two unfortunately, but we have still attempted to cover them in our final paper. We emphasize that this paper takes no view on any of these alternatives nor whether they should supplement the currently preferred rates articulated by the ARRC which we discuss as the core of the LIBOR Transition response. **We should also note that there was considerable material shared related to BSBY and, more limitedly also, AMERIBOR, so there is a disproportional amount of feedback on those alternative rates and hence, only reflect the balance of the discus-**

sions in our interviews that occurred during the release of those alternative RFR's to SOFR.

For the past two years our studies have included a vigorous debate relating to the efficacy of SOFR (simple, compounded in arrears or Term) in meeting the specific concerns of several participants related to properly reflecting the costs of unsecured borrowing, that reflects their funding costs, especially in volatile markets. The strongest proponents for a CSR have been institutions with large commercial and retail lending portfolios and included both G-SIB's (U.S. and global) and many U.S. regional banks. This debate was less contentious when we began these efforts in 2019 and gained traction in 2020 with the ARRC and Federal Reserve level discussions within their CSG Working Group. The impasse coming from those exchanges left those in the industry who were CSR advocates without a reference rate with an appropriate level of endorsement from the ARRC or the Federal Reserve and focused their attention on working with providers in the market to produce a suitable RFR that would provide those protections and would meet market guidelines.

Participants noted that the reason CSR's have been explored is that SOFR, as constructed, currently lacks an appropriate reflection/response to volatile markets especially for underlying credit exposure to their counterparts. In their view, **as a result, SOFR does not properly reflect the costs of unsecured borrowing which approximates their funding costs.** This concern has been voiced by institutions, but primarily those with larger commercial lending portfolios as we have noted above.

Given this baseline, we explored which groups of institutions were most concerned about the potential for market volatility combined with investor demand that will result in a lower yield and a compression for the institutions cost of funding. Not surprisingly, U.S. regional banks and global lenders felt the strongest. One institution noted

that their memories of the issues surrounding the Covid Pandemic and lending ring true. “We believe that there is a risk given our experiences with the Pandemic. If there is a line of credit that is open, we saw negative convexity; clients will draw and our exposure for incremental originations under stress become meaningful exposures and we could not hedge against it. This has been clear from the beginning as we considered our LIBOR options and our ability to manage our funding vs. lending spreads and the gaps we will need to fill and why we want a CSR.” One of the banks expanded on this thinking by noting that “regional banks do not borrow in the repo market and during a crisis like COVID their cost of funds goes to zero and they have meaningful risk. Larger banks have it much easier. Regional banks need to focus on their function and remember what happens with excess liquidity and the marginal cost of funds. They need to reconcile supply and demand and how that translates into product pricing.”

There was a meaningful set of institutions who highlighted the need to include CSR’s as part of their multi-faceted approach to managing counterparty credit risk, especially in volatile markets. One of the larger G-SIB’s who did not necessarily favor this approach commented, “in the commercial lending space, we know regional banks are not satisfied with SOFR. Many of their concerns focus on times of financial crisis and the impact of borrowers drawing down and the conundrum on funding in a time of crisis. We are not surprised that a regional bank would not be all-in on SOFR since credit sensitivity allows them to offset that risk and the SOFR world will not allow them to do that. It is a divergence our business models.” Some foreign banks spoke in detail about the implications of a SOFR in arrears going awry. The implications they note were that “the adjustment credit cost for the borrowers will go up and some will pass that on; some complain in public and do a review and pricing will change. You will eventually get pushback from the clients using SOFR or from the index borrower

side.” Some noted that eventually the “first question asked is how do you get out of this transaction and where is my hedge, how do I hold on to it, sell with liquidity and currently with SOFR—that does not exist.” Alternatively, they commented that “even if tomorrow I had to use BSBY I could do it with Eurodollar futures and get close. If the market has numerous BSBY notes hit the market in the next few months even with some Term SOFR the Fed will have to listen.” One bank noted as a purchaser that they would not want to buy a SOFR linked note given inefficient pricing and it is not reflected in the market nor where the Fed is setting the floor or a ceiling. I would prefer the market to set those rates and keep the government out. One of our third parties was succinct: “SOFR does not currently represent the borrowing costs and the funding costs for the banks.”

Another G-SIB was equally blunt, “you are seeing developers of CSR’s see the delay in the development and approval of Term SOFR and gain momentum building for CSR’s to ‘solve both problems.’ This is not due to demand from clients, just the opening allowed.” Another bank said, “without Term SOFR CSR’s will grow rapidly and we will have to support it. We need Term.” The challenge banks explained is that “the absence of a SOFR forward rate ensured that institutions would turn elsewhere. BSBY ticks that box. From an Asset Liability Management perspective, it has a feel like LIBOR and keeps the current ALM paradigm with a credit sensitive index.”

A larger regional bank had a different take when they noted that it was unclear what factors institutions were given to assess CSR’s relative desirability, noting that the markets have the plan and capital to carry out that model and get to the ‘right outcome’ and where to push or not to push. Regulators, they noted, originally ignored CSR’s which created a problem. “What are the factors that institutions are using to assess CSR’s relative desirability? I do not see the need or value for regulators to get in the middle; we have plan and capital to carry this through; we will get to the right



outcome; they need to push or needed. To push is a better place from the market perspective. They ignored CSR and that is a problem which was a missed opportunity for proper estimates for SOFR and now they don't need to tell us what to do." Others noted that CSR's could be a bridge who's gap with SOFR is filled by having the term component which is something everyone can agree on." Our data would not suggest that "everyone" would agree on that—although many would.

We do believe that some segment of the corporate client base would like to have a forward-looking term rate where they could project their interest expenses which can reflect some of the pricing demand for CSR's right now. One larger bank commented that "pricing for BSBY is easier for lending and more like LIBOR credit spreads and easier for loans. The correlation is not perfect but close. The client feedback is that they are happy." An insurance company commented that "clients want a rate that is a competitive market rate—forecasts cash flows—no operational expenses and they also want to trust someone. We would like to see momentum in that direction. We know that this is "not a quality of market opinion." Several large banks make the market; they make the loans; we would buy them. However, we cannot have six infrastructures to accommodate all these rates. Right now, we still see too little action and too much speculation and agreement. Operational costs are significant. CSR costs are meaningful."

AMERIBOR

For background, AMERIBOR (American Interbank Offered Rate) is described as a "transparent benchmark interest rate based on the overnight unsecured loans transacted on the American Financial Exchange (AFX) which is a self-regulated electronic exchange. CBOE Global Markets hosts the AFX exchange in its services."

As market participants are aware, AMERIBOR is calculated as the transaction volume weighted average interest rate of the daily transactions in the AMERIBOR

overnight unsecured loan market. It is expressed in an actual/360 interest calculated method and rounded to the fifth decimal place—calculated and published at the end of the day. It is verified by a third party—IOSCO compliant—published in real-time via an API. Market participants noted that key to this is that the transaction volume is weighted, meaning that if the transactions have a high rate, then the rate and the volumes will skew that way. AMERIBOR was launched in 2015, based on overnight lending conducted by 170 regional banks over AFX with an exchange trades on average of \$2 billion per day.

Interest and Demand for AMERIBOR

We inquired about the interest in the use of AMERIBOR and received a reasonably consistent response. **There is a steady expression of interest, some of it quite public in AMERIBOR and both Zions and Signature Bank have been among those public about that interest.** One of the regional banks in our study noted that "lots of those community banks currently fund in AMERIBOR and they are familiar with it and are not terribly engaged in the discussions around the transition. One of the larger regionals noted that "smaller banks with more of a voice in this space who are below \$100 or \$50 billion are looking for easier solutions." Another noted that, "community banks know from 'down the street' are using AMERIBOR and there is trust here that this is easier that they can scale, and it won't be jammed down your throat." Another regional agreed that "their funding comes from the AFX exchange, so they are more comfortable." They also as one commented "do not hedge meaningfully. There are deposit takers and excess liquidity and depending on position and they are not ready for size, and they do not manage a rate position and these guys do not need all that." An important distinction was raised by one participant who articulated that "AMERIBOR is different qualitatively than other CSR's in that the transactions are from the AFX exchanges. BSBY is from the G-SIB's and ICE is off BYI and Panel

banks. Smaller institutions who have correspondent banking relationships are funding off AFX their cost of funds in AMERIBOR and align with its index and then they can match up cost of funds across instruments." One of the largest G-SIB's noted that as a result, "AMERIBOR will be there since trading desks will try to trade it next year whether its big enough to get involved, we fully expect it to hang around."

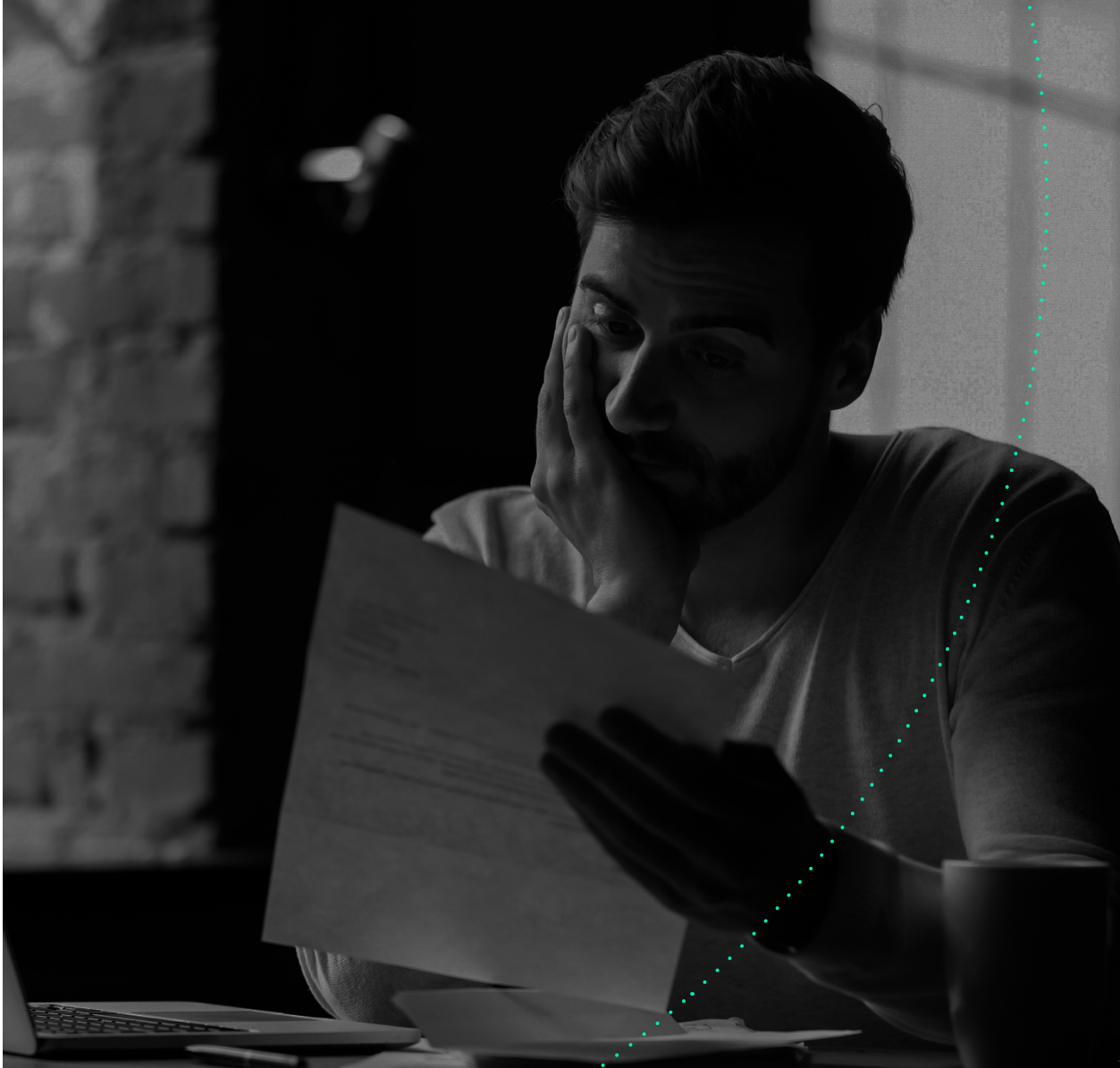
IHS Markit

Post our interviews being completed, the IHS Markit Index (CRITR & CRITS) was introduced into the industry. These two rates were introduced in June of this year and are inclusive term rate and credit inclusive term spread. CRITR is an all-in rate and CRITS is the add on spread. The plan is that they will be available in the overnight, one, three, six and twelve month markets. **How CRITR differentiates itself is that Markit views this as leveraging only transactions using the Certificates of Deposits and Bond Transactions.** The DTTC and FINRA use their data set for commercial paper as well—pools of data, no quotes, or submissions. They do not limit to the LIBOR panel banks. The data is utilization of bonds used in financial markets—so G-SIB's, foreign branches, and regional banks in the US.

Second, as several of our participants noted who discussed CRITR with us as part of our very brief third round of discussions, this index can be used as an add-on to SOFR or as a standalone rate. Markit believes that it could be used by firms who are potentially struggling with lending products and can be used with any type of product. Markit see's that adoption is driven through those benchmarks but there is a need for an ecosystem where cash products and easy for those banks to access this.

Across the Curve Credit Spread Index (AXI)

Like the IHS Markit reference rate discussed above, this paper did not have any appreciable time for our paper to garner client feedback at all about



AXI. So, we are sharing what was out in the public domain including material shared by SOFR Academy.

This index was described recently as “a rate that can be used as an add-on to SOFR”. Unlike LIBOR it is based on bank funding transactions across a range of maturities, out to five years. On Tuesday, June 22nd the provider submitted a paper to the ARRC setting out how AXI would supplement a SOFR rate. The provider also is currently in discussions with regulated benchmark administrators regarding publication of the rate.

AXI represents the weighted average cost of wholesale unsecured bank debt funding in various maturities. Since we completed our interviews there have been extended discussions on this approach with global regulators and policymakers to expand the familiarity with the rate and its potential benefits for the market.

SOFR Academy notes that the AXI offering is an approach to credit sensitivity that factors in the volume of longer-term bank funding transactions which occur further out the yield curve. **We believe that it results in a spread that is less volatile than LIBOR and is representative of the actual bank funding costs.** This representativeness and robustness would be maintained over time, automatically adapting to any potential changes in bank debt maturity profiles.”

Bloomberg Short Term Bank Yield Index (BSBY)

For consistent definitional purposes, BSBY is a proprietary index calculated daily and published at 8am EST (on a business day). BSBY incorporates bank credit spread and defines a forward-term structure. Measures the average yields at which large global banks access USD senior unsecured

marginal wholesale funding. This index measures what investors are willing to pay based on senior unsecured bank notes at various tenors (Overnight, one, three, six and twelve months). The notes considered in the tracking include Commercial Paper, Certificate of Deposits, and trades of senior unsecured corporate bonds of G-SIB banks and some additional systemically important banks excluding state owned banks. It is constructed using a 3 day rolling window of data on those tenors which need to hit a minimum volume threshold. If that volume threshold is not met, then the process falls to a longer rolling window. At the date of our writing there were several issuances—most recently a one year basis swap for \$250 Million with one side tied to BSBY and the other SOFR by a joint deal lead by Bank of America and JP Morgan. A month prior Bank of America issued a \$1 billion six-month FRN using the 1-month BSBY.

Client Feedback in the Project on BSBY

Initially, a number of firms who were generally on the fence on its utilization were concerned that BSBY would fail to garner enough momentum to have a meaningful impact on the transition. One G-SIB noted that “when you look at BSBY historically compared to five years ago, we are concerned that the sponsors could be on a ‘bit of an island.’ We think you could see a situation where the credit spreads are attractive for money markets, but not realistic to see that this year. It will need time to transition and see where it stands in 2022.”

An international G-SIB noted that “six months ago the only credible solution for USD Transition is SOFR. We are concerned that they will not be able to take on options for example, and we are not seeing the interest in the market one of them taking off. There might be some pocket traction but hard to see one of them taking the whole derivatives market, securities and lending market.” A smaller international bank, reflecting their current lack of focus, said “BSBY’s availability is quite new is something what we are hearing from others, and we will potentially consider it.” A larger investment manager

noted that “we want to see an entire raft of BSBY deals and we do hope they increase.”

There was a segment of the market that believed that the relative similarity of BSBY to LIBOR would give them some market acceptance. A group of firms noted that familiarity and simplicity in the transition was critical. And for a group of those firms a core conviction is that relative operational ease (which we discussed in that section) as well as an ability to calculate, risk management, contract transfer, etc., would be primary in their consideration of use of alternative RFR’s.

One of the larger end-users noted that “BSBY looks like LIBOR and re-sets every two days, and we would have a process now to drop that into our approach.” A regional bank who supports this effort noted that “this index has the potential to succeed because it is very similar and well correlated to LIBOR for time series. BSBY does not spike as much in volatility and one of its positive intangibles is that it does not look like a LIBOR replacement.” Another regional bank emphasized that “BSBY or BY1 are close enough to LIBOR to just slot it in. It is much easier for market participants on their own without quasi-official sector guidance and standards.” The BSBY

methodology is robust since everyone has a Bloomberg Terminal and feeds into the systems and its portability is easier and its components are better reflections of funding costs vs. SOFR. Most organizations do not believe in SOFR for funding costs and regional banks have not bid for SOFR.”

This analytic and operational support for BSBY has yet to turn into demand for the product. **Among the challenges for the proponents is clearly being able to leverage the relative ease and comfort in its use.** The profligate utilization of Bloomberg throughout institutions and the common interests of big parts of lending institutions throughout the U.S. makes this tenable going forward. How that turns out will take months to sort out if not longer.

There was solid, though somewhat mixed, feedback on the actual demand for the product. One international global G-SIB noted that “we have had a good discussion on the issue, but we are not seeing demand and having the growing pains for an unknown rate, especially for one that did not exist before. For our purposes we have not seen a desire for any CSR rating. Possibly that will arise from a funding perspective which is where we know the noise is coming from.” A regional bank noted that trying to create that demand could be challenging since “we are not sure that the industry knows how the pricing on this works correctly. If they did, we think they would like to be short the CSR or buy the protection. If it is a SOFR loan and it has a premium price, the client likely has no basis for a strong opinion since they might be missing the pricing piece.” An insurance investor commented that right now “we do not see an actual interest in trading a CSR right now, but we suspect there will be more interest. People are clamoring for whatever will get the most comfortable equality of process.”

There were some practical concerns addressed by others. One of the larger trading G-SIB’s noted that “the reason there is no demand is that they are not offering it in term sheets; they are not getting demand because banks are not

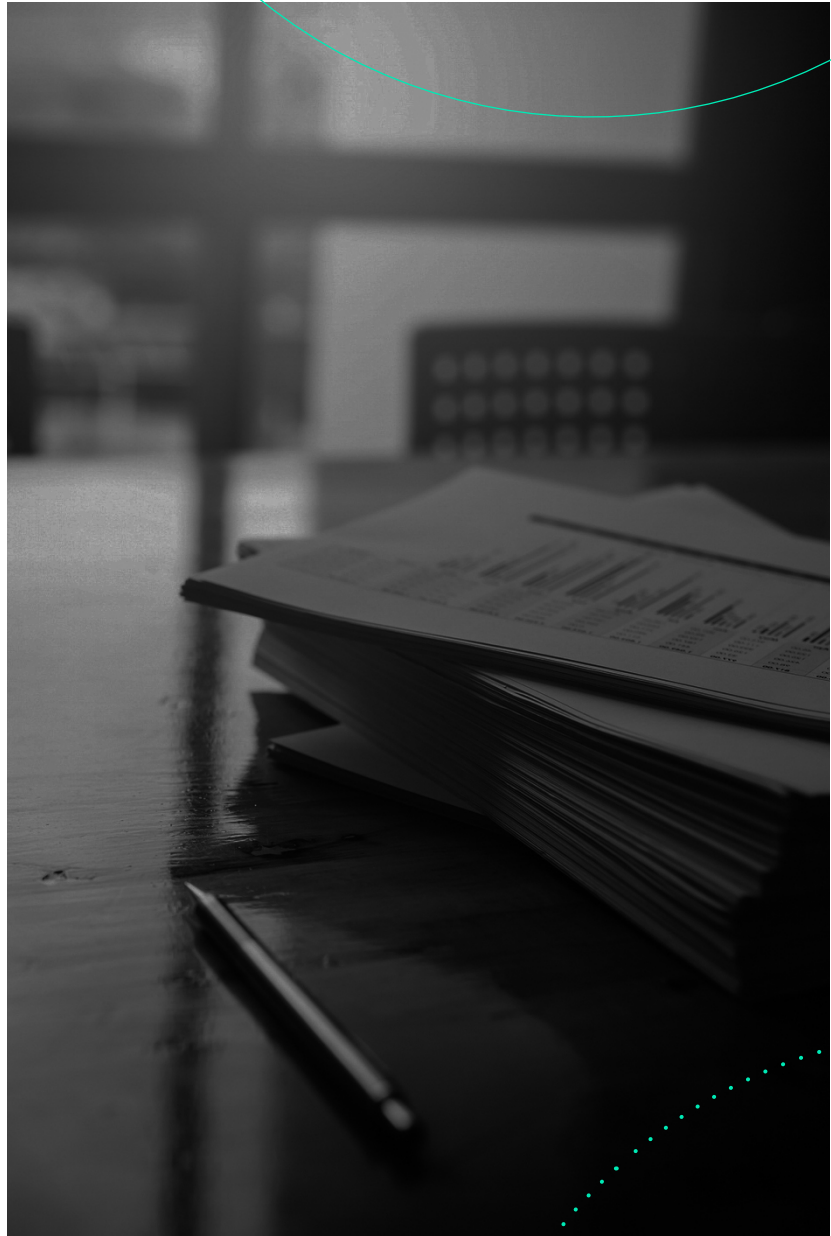


really offering it. And it is hard because the regulators do not want this flexibility. Second tier regional banks just don't want to get smoked and they need someone to lead." As a result, this bank continued, "we see no demand at all right now. We know it will come from the money fund complex but that's it so far."

At this point, participants did not identify any demand from the corporate sector with a range of opinions. One of the larger international G-SIB's noted that "we have not seen corporate demand for BSBY. Commercial conversations between the lender and borrower have not yet occurred. AMERIBOR is not seen as an introduction into the multi-rate environment. We just are not seeing demand yet." One of the regional banks who strongly supports CSR's and BSBY commented that "we have received very little feedback on BSBY or any other CSR from our commercial clients but there is a bit of 'anecdotal support' just emerging." Another global bank was blunt, saying "there are no corporate treasurers buying it; it has not been a competing product yet." That sentiment was echoed by a large G-SIB who said, "we have not seen customers who want to use it."

However, as we noted above, Credit Investors in part at minimum like the credit sensitivity element. One of the skeptical G-SIB's commented that "we do see a buyer base in the money fund community, the yield world. If you can get someone to offer more than one option, then it would happen here. You need something deep and liquid over time and then it could succeed." A larger institutional investor concluded that "there will be demand from mutual funds who buy bonds that are exposed to the direction they want to be exposed and for them, it will make sense. This is a highly regulated group and all of them are regulated by the SEC. The other buyer would be banks who want the credit convexity."

Finally, as we have commented a group of our participants felt that the CSR space is still too 'new' and 'niche' and needs exposure and growth before it takes hold. One regional bank



who supports them said "we are doing operational readiness to support other rates." Another bank commented that "we are moving forward with SOFR but if one of these CSR's is more prevalent than we would use it. But we see that several years down the road. A foreign bank said to date "we have not put much thought into it. We are doing further analysis and see what the turnaround is." A regional bank who has supported this effort for a considerable period commented that "we do not have parameters which we are testing. We are going to vet wholistically; going to need to see how this product

behaves in an economic cycle and in a recession and see the tick up in free rates. We need to see the forward market as well; need the IRS and FASB to transition and bless it from a hedge accounting perspective." A foreign G-SIB summarized some of the hurdles when they concluded, "with respect to all the CSR's we are looking at what it would mean for the investment and monetarily the workload. If we need to build it out if there is demand from smaller banks than we would do that. It will require work across operations and technology that we have yet to consider."



Project Summary.

We believe that our study provided an interesting vehicle for discussions for the various reference rate options as well as the strength of views on multiple sides of the individual questions. We doubt based upon the data that these topics sort out incredibly quickly though some larger market makers would like to see that happen. The conflicts which used to play out for the most part in bilateral dialogues or group ARRC discussions or webinars/seminars are now finding their way into the public square and hence has increased some of the volume and the inevitable divisiveness. These exchanges in the U.S. are also occurring somewhat late in the game compared to other geographies. Ample consideration of supplemental approaches to the official sector approved rate (SOFR) is just now being vetted though well known to the industry. **The alternative reference rate dialogues, which include a handful of different providers, have been ongoing for a year or more and received the attention of the CSG, but no resolutions have been reached.** Several of those options have just come onto the market in the past month+ and at least one other has yet to appear. Some institutions wanting to put a stake in the ground (especially for AMERIBOR) got out in front of other discussions in 2020. Most of the industry shares the desire for a hastened resolution and voiced those thoughts throughout our dialogues. Others, while sharing that conviction, want to give the market a chance to consider the options without the imposition of official sector jawboning or less likely, guidelines.

A broad set of U.S. institutions have a global concern that they are implementing massive changes on multiple continents and have tens of thousands of clients to educate, remediate and make meaningful progress towards transition completion. Others, while quite large, are significantly more domestically focused and have heavily biased business in commercial and retail lending. These players are not market makers in derivatives and have very different concerns.

There are also then at least one or two other segments of the U.S. Banking Community who frankly would wish this would go away. They have far smaller exposures in LIBOR as opposed to other reference rates and find this effort a nuisance at best. The U.S. also has this enormously diverse and complex end-user community ranging from the world's largest multi-trillion-dollar investment managers with very complex portfolios to global treasuries with numerous business lines to fund all the way down to niche service line companies that need the very simplest solutions to allow them to complete this transition.

If there is one thing we have learned through our hundreds of conversations since 2019 it is the following. There will be more issues to unfold, more debates to be held, extended interactions to resolve and a transition that will have several intermittent conclusions extending well past the end of this calendar year.

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