Alternative Reference Rates Committee (ARRC)
Minutes for the April 11, 2019 Meeting

1. Federal Reserve staff announced that all current ARRC members would continue their memberships for another year, the American Bankers Association, CRE Finance Council, and Structured Finance Industry Group that had been participating in working groups would be appointed as members, and that Prudential Financial would join the Committee as a member.[1] As required annually by the Terms of Reference, all ARRC members ratified the Terms of Reference and reaffirmed adherence to the ARRC's Antitrust Guidelines. The ARRC's antitrust counsel provided an overview of the Committee's antitrust guidelines.

2. The Federal Reserve nominated Tom Wipf, Vice Chairman of Institutional Securities at Morgan Stanley, to be the ARRC's chair, following consultation with ARRC members. ARRC members unanimously approved Tom as the ARRC Chair. In brief remarks, the ARRC Chair emphasized the importance of the Committee's work as 2021 approaches and highlighted plans to work with the diverse membership of the ARRC to achieve a smooth transition away from U.S. dollar LIBOR and a successful implementation of the Paced Transition Plan.

3. Tim Bowler, President of ICE Benchmark Administration (IBA), provided the ARRC with a presentation (Attachment 1) on the IBA's public proposal for a U.S. Dollar ICE Bank Yield Index. This presentation followed a presentation (Attachment 2) at the February meeting in which David Bowman commented on certain aspects of the proposed index. The IBA presentation was followed by a discussion in which Mr. Bowler answered questions from ARRC members.

4. Federal Reserve staff highlighted the first anniversary of SOFR's initial publication, noting that since then, underlying volumes have averaged about $850 billion per day and that progress continues to be made on the development of SOFR-related derivatives and cash markets.

5. Federal Reserve staff and ARRC members provided an overview of the discussion that took place at the Financial Stability Board Roundtable on Reforming Major Interest Rate Benchmarks on April 10. It was noted that at the Roundtable, private sector market participants expressed a strong interest in gaining clarity around tax, accounting, and regulatory issues related to the transition away from LIBOR. In addition, it was noted that attendees of the Roundtable acknowledged the inevitability that LIBOR would cease at some point in the future and expressed a strong sense of urgency to achieve a smooth transition away from LIBOR.

6. The Chairs of the Floating Rate Notes and Business Loans working groups presented their working groups' final recommended fallback contract language for market participants' voluntary use in new issuances of floating rate notes and syndicated loans. ARRC members approved the recommended language, which was subsequently released.

7. There was discussion of upcoming publications and events:

   Federal Reserve staff noted that ahead of the release of the recommended fallback language for floating rate notes and syndicated loans, the ARRC would publish a guide to using SOFR in cash products that would address a range of topics, including differences between using *simple* or

[1] A current list of ARRC members is available here.

compound averages of SOFR and differences between calculating payments using *in arrears* or *in advance* conventions.

Federal Reserve staff noted that two staff economists from the Federal Reserve Board would release a follow-up note to previous work they had published on a potential methodology for calculating forward-looking SOFR term rates once SOFR derivatives markets develop sufficient depth and that the note would be accompanied by the release of data on indicative forward-looking term rates. The ARRC Chair noted that it is important that market participants do not delay their LIBOR transition efforts while waiting for an IOSCO-compliant forward-looking SOFR term rate and that those who can use SOFR should plan to do so.

The ARRC Chair discussed the Committee's goals and major workstreams for 2019.

Federal Reserve staff noted that the ARRC would host a vendor workshop in the coming months and would establish an Operations/Infrastructure working group to address technological challenges related to the LIBOR transition.

8. The meeting concluded with updates from various working groups:

   The Chair of the Accounting/Tax working group noted that the group had requested that the Financial Accounting Standards Board (FASB) provide relief on certain accounting and hedging rules that would help support the LIBOR transition and that the ARRC had sent a whitepaper to the U.S. Treasury identifying key areas of tax relief needed for a successful transition away from LIBOR.

   The co-Chairs of the Legal working group noted that the ARRC had engaged Cadwalader to identify issues associated with seeking potential New York legislative relief for legacy products referencing U.S. dollar LIBOR and that the working group would work with Cadwalader to define the scope of any potential legislative relief efforts and the policy rationale for that scope. Based on this analysis, the ARRC would then decide whether to pursue any potential relief.

   The co-Chairs of the Regulatory Issues working group requested the views of ARRC members as to whether, in addition to the requests made by the ARRC to U.S. regulators last July for clarification regarding treatment of legacy derivatives transitioned to SOFR, there should be an additional request that new SOFR-linked derivatives that are not subject to mandatory clearing and executed before a regulator-specified date at or prior to December 31, 2021 be exempt from initial margin requirements in order to build liquidity in the market. ARRC members agreed that this additional request should be made.

Attendance at the April 11, 2019 Meeting

ARRC Members	
AXA	Julien Zusslin
Bank of America	Alex van Voorhees
Bank of America	Paul Scurfield
BlackRock	Alex Krol
Citigroup	Jeannine Hyman
Citigroup	Dina Faenson
CME	Fred Sturm
Deutsche Bank	Adam Eames
Deutsche Bank	Vishal Mahadkar
Fannie Mae	Nadine Bates
Fannie Mae	Wells Engledow*
Freddie Mac	Ameez Nanjee
GE Capital	Michael Taets*
Goldman Sachs	Jason Granet
Government Finance Officers Association	Pat McCoy
HSBC	Shirley Hapangama
Intercontinental Exchange	Timothy Bowler
Intercontinental Exchange	Harvey Flax
International Swaps and Derivatives Association	Nikki Cone*
JP Morgan	Terry Belton
JP Morgan	Andrew Gray
JP Morgan	Keith Stephan
JP Morgan	Emilio Jimenez
LCH	Phil Whitehurst
MetLife	Kevin Budd*
MetLife	Alex Strickler*
Morgan Stanley	Tom Wipf
Morgan Stanley	Priya Bindra
Morgan Stanley	Maria Douvas-Orme
National Association of Corporate Treasurers	Tom Deas
Pacific Investment Management Company	Aaron Kim
Pacific Investment Management Company	Scott Goodman
Prudential Financial	Gary Horbacz
Prudential Financial	Chris McAlister
TD Bank	Greg Moore
TD Bank	Priya Misra
The Federal Home Loan Banks, through FHLBNY	Phil Scott*
The Federal Home Loan Banks, through FHLBNY	Rei Shinozuka
The Independent Community Bankers of America	Chris Cole*
The Independent Community Bankers of America	James Kendrick*
The Loan Syndications and Trading Association	Meredith Coffey
The Loan Syndications and Trading Association	Tess Virmani*
The Securities Industry and Financial Markets Association	Rob Toomey

The Securities Industry and Financial Markets Association	Chris Killian
Wells Fargo	Alexis Pederson
Wells Fargo	Brian Grabenstein
World Bank Group	Don Sinclair*

Ex-Officio ARRC Members

Commodity Futures Trading Commission	Sayee Srinivasan
Bureau of Consumer Financial Protection	Abhishek Agarwal
Federal Deposit Insurance Corporation	Irina Leonova
Federal Housing Finance Agency	Dan Coates
Federal Reserve Bank of New York	Matt Lieber
Federal Reserve Bank of New York	Nathaniel Wuerffel
Federal Reserve Bank of New York	Ray Check
Federal Reserve Bank of New York	William Riordan
Federal Reserve Bank of New York	Cam Fuller
Federal Reserve Bank of New York	Justine Hansen
Federal Reserve Bank of New York	Jamie Pfeifer
Federal Reserve Board of Governors	Evan Winerman
Federal Reserve Board of Governors	David Bowman
Federal Reserve Board of Governors	Chiara Scotti
Federal Reserve Board of Governors	Erik Heitfield
Office of Financial Research	Matt McCormick*
U.S. Securities and Exchange Commission	David Metzman
U.S. Securities and Exchange Commission	Michelle Danis*
U.S. Treasury	Peter Phelan

Observers

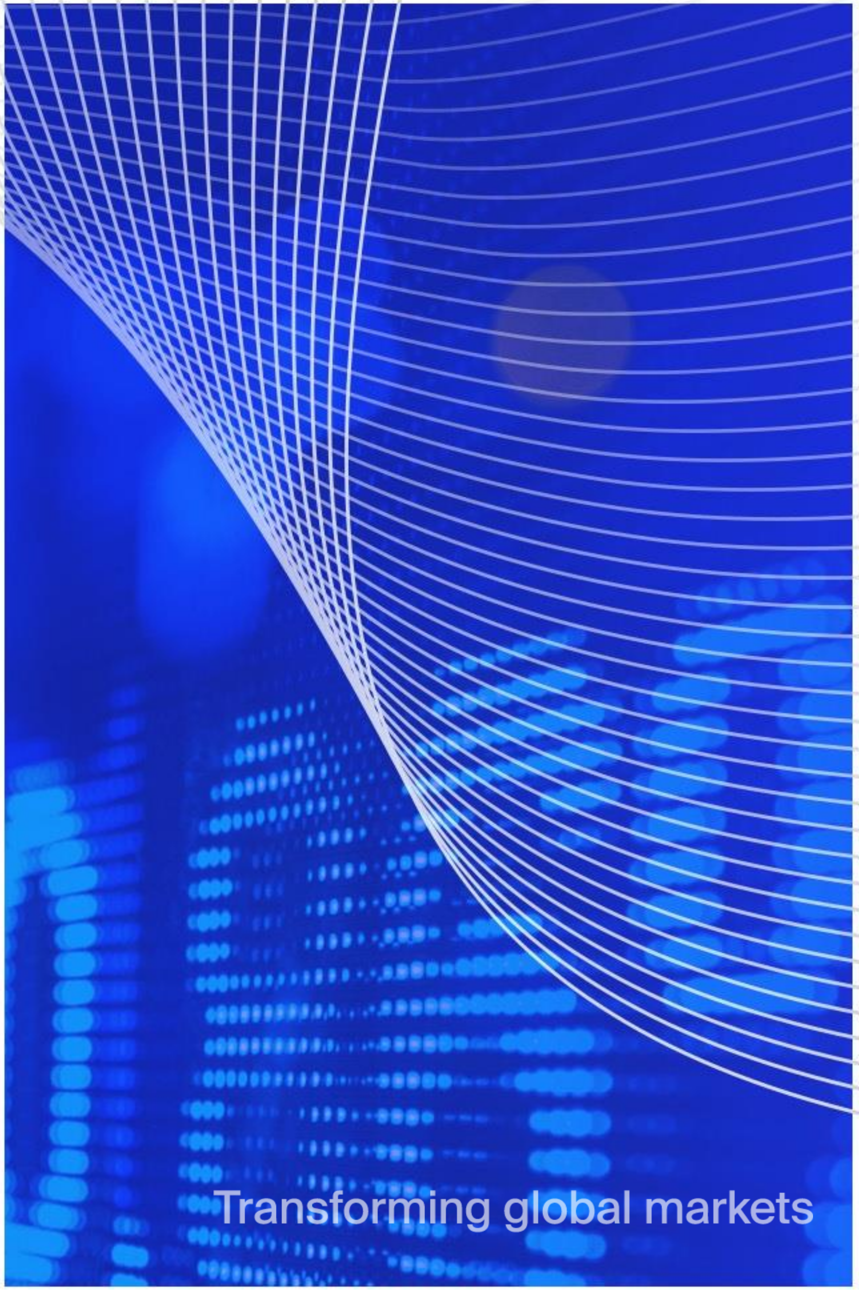
American Bankers Association	Hu Benton
Bank of Canada	Sheryl King
BNP Paribas	Simon Winn
BNP Paribas	Greg Cordani
BNP Paribas	David Gorans
BNP Paribas	Mony Liguard
CRE Finance Council	Raj Aidasani
Morgan Lewis	Jon Roellke
Structured Finance Industry Group	Sairah Burki
Structured Finance Industry Group	Jennifer Wolfe
Venerable	Charles Schwartz

*Indicates participation by telephone

ATTACHMENT 1

US Dollar
ICE Bank Yield Index

ICE BENCHMARK ADMINISTRATION



April 2019

US Dollar ICE Bank Yield Index

Executive summary

- The Bank Yield Index was developed to measure average unsecured bank yields in the USD money markets for the term settings (one, three and six months) most widely used in lending contracts
- The Index is calculated using eligible transactional input data representing short-term wholesale, unsecured investment yields in respect of large banks:
  - Primary market funding transactions (e.g. eligible bank deposits, CP, CDs)
  - Secondary market bond transactions (e.g. trading of eligible short-dated bank bonds)
- IBA believes the Index has the potential to be an attractive replacement rate for USD LIBOR in funded and un-funded (e.g. revolvers) lending obligations:
  - Unsecured pricing index referencing a diverse set of banks
  - Forward-looking term settings
- To date the Bank Yield Index has shown a close correlation with other benchmarks that seek to incorporate the short-term, unsecured credit risk associated with financial institutions

US Dollar ICE Bank Yield Index

Focus markets

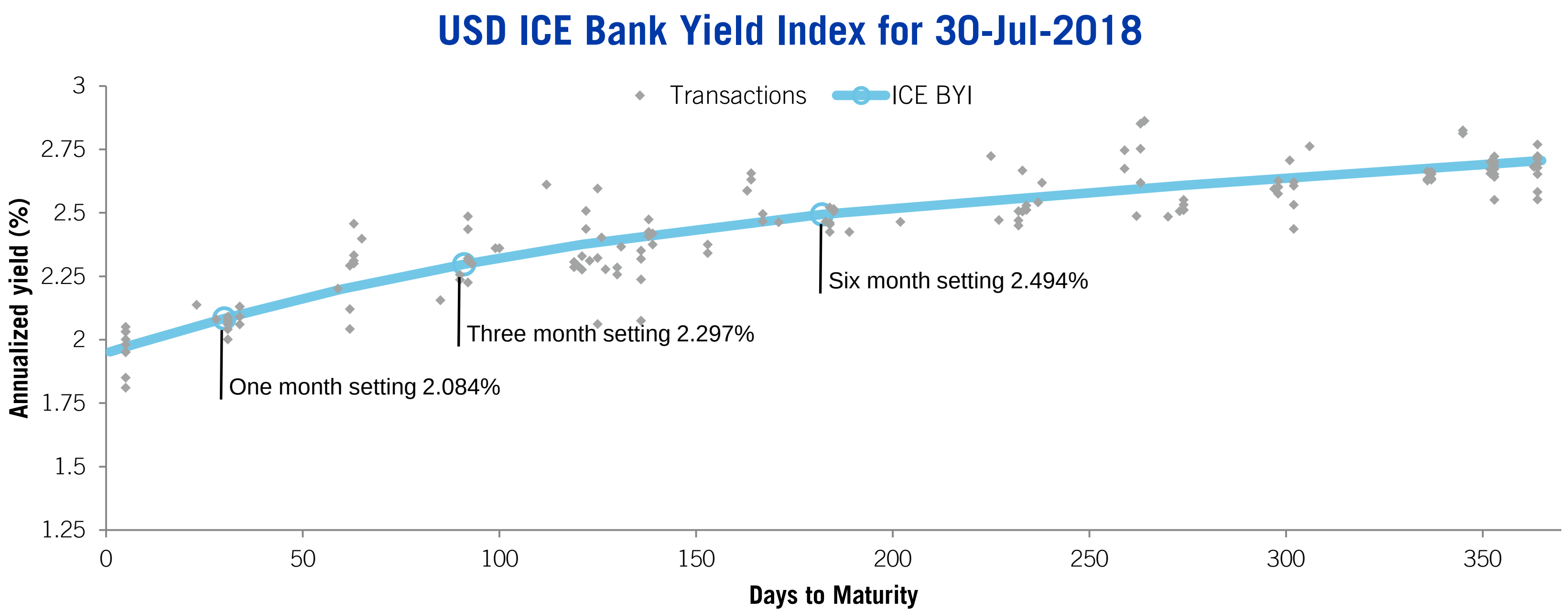
- Syndicated loans
- Non-syndicated business loans
- Potentially commercial real estate related loans

	USD LIBOR Market Footprint by Asset Class*	Volume ($TN)
Over-the-Counter Deivatives	Interst rate swaps	81
	Forward rate agreements	34
	Interest rate options	12
	Cross currency swaps	18
Exchange Traded Derivatives	Interest rate options	34
	Interest rate futues	11
Business Loans	Syndicated loans**	1.5
	Nonsyndicated business loans	0.8
	Non syndicated CRE/Commercial mortgages**	1.1
Consumer Loans	Retail Mortgages***	1.2
	Other Consumer loans	0.1
Bonds	Floating/Variable Rate Notes	1.8
Securitization	Mortgage-backed securities (incl. CMOs)	1.0
	Collateralized loan obligations	0.4
	Asset-backed securities	0.2
	Collateralized debt obligations	0.2
	Total USD LIBOR Exposure	198.3

** Source: ARRC Second Report - Federal Reserve staff calculations, BIS, Bloomberg, CME, DTCC, Federal Reserve Financial Accounts of the Unites States, G.19, Shared National Credit, and Y-14 data, and JPMorgan Chase . Data are gross notional exposures as of year-end 2016.*
***The figures for syndicated and corporate business loans do not include undrawn lines. Non-syndicated business loans exclude CRE/commercial mortgage loans.*

US Dollar ICE Bank Yield Index – Constructing the Index

Example curve-fitting and obtaining term settings



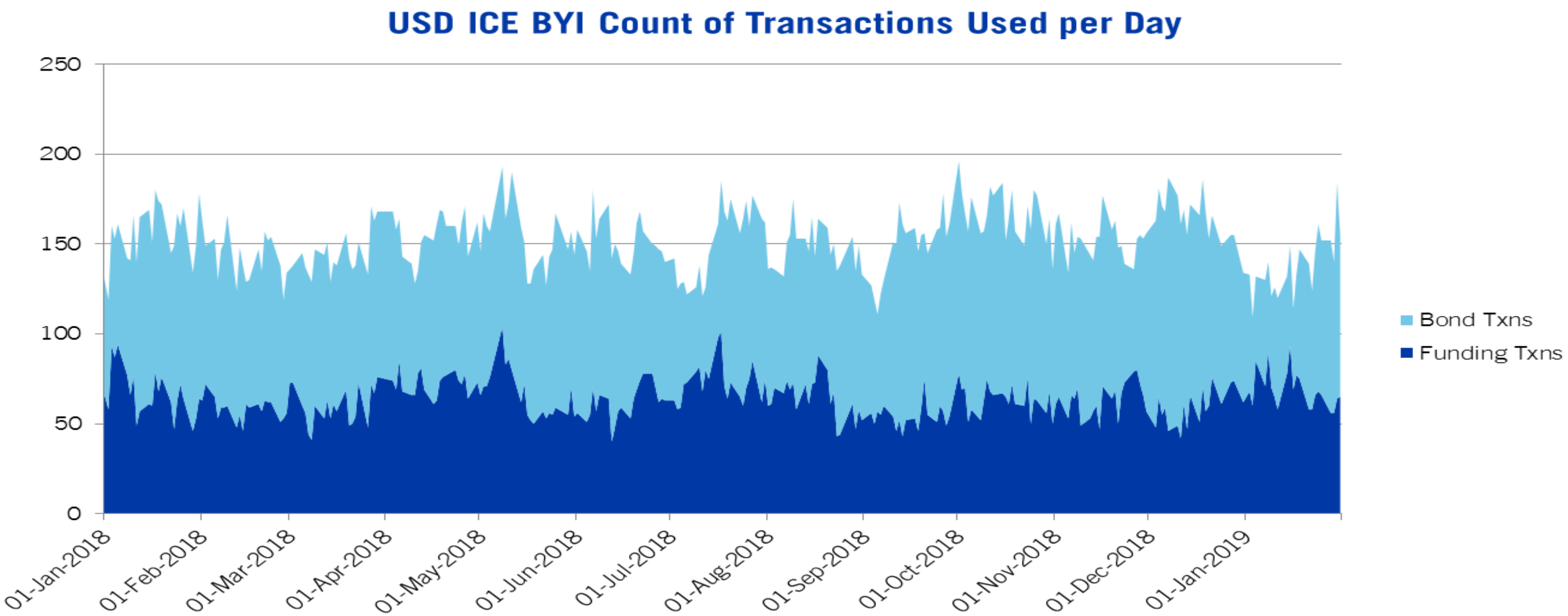
- Primary and secondary market transaction data points are collected daily by IBA in order to construct a credit-sensitive yield curve, using a third order polynomial regression[1]
- One month, three months and six months Index settings are then determined from the yield curve at designated maturity points[2]

[1] *Regression method and outlier treatment are subject to refinement following stakeholder feedback*

[2] *Where fewer data points than a defined target threshold are available on a given day for a publication tenor (i.e. one, three, or six months), data points from previous days (maximum of five days) will be incorporated into the curve. If there are still insufficient data points (using up to five days' data points), a contingency rate will be published based on the last rate derived using transaction data points and the standard methodology, adjusted for movements in risk free reference rates (e.g. OIS swaps, US Treasury yields, term SOFR [if available]).*

US Dollar ICE Bank Yield Index

Number of input data points used per day



- Average of 64 funding transaction data points used per day (dark blue) with an average notional of $92MM. The data was sourced from 13 USD LIBOR panel banks

- Average of 89 bond transaction data points (light blue) used per day with an uncertain average amount due to volumes for transactions > $5MM being masked[1]

[1] *Sourced from FINRA's TRACE . The notional amounts for transactions greater than $5.00MM are published after a six month delay.*

US Dollar ICE Bank Yield Index

Volumes in respect of input data points used

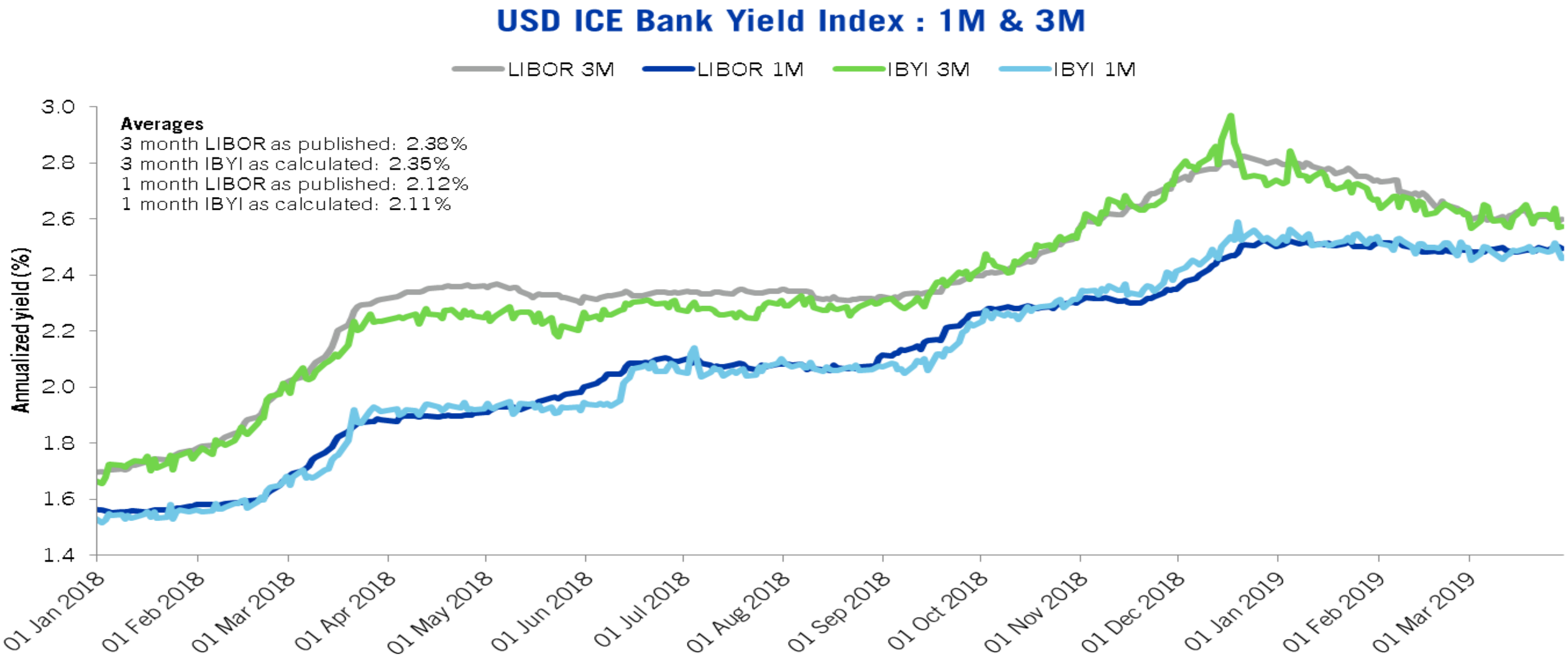
Transaction Type	Average Number of Transactions (per day)	Average Individual Transaction Volume	Average Aggregate Transaction Volume (per day)
Same-Day Funding Transactions	37	USD 100m	USD 3,706m
Funding Transactions from Previous Days	27	USD 81m	USD 2,164m
Total Funding Transactions	**64**	**USD 92m**	**USD 5,870m**
Same-Day Bond Transactions (USD 2 - 5m)	22	USD 3.2m	USD 69m
Bond Transactions from Previous Days (USD 2 - 5m)	38	USD 3.2m	USD 119m
Total Bond Transactions (USD2-5m)	**60**	**USD 3.2m**	**USD 189m**
Same-Day Bond Transactions (>USD 5m)	12	TBD*	TBD*
Bond Transactions from Previous Days (>USD 5m)	18	TBD*	TBD*
Total Bond Transactions (>USD5m)	**29**	**TBD***	**TBD***
Total Transactions (All Types)	**153**	**TBD***	**TBD***

- Funding data initially sourced from 13 USD LIBOR panel banks:
  - IBA is looking to expand the set of contributing banks to increase data points
- Bond data, sourced from TRACE™, referencing the obligations of 30 large, internationally active banking groups

** The notional amounts for transactions greater than $5.00MM are published after a six month delay*

US Dollar ICE Bank Yield Index

Preliminary testing – January 2, 2018 to March 29, 2019



- Preliminary testing results do not exclude any “outlier” data (i.e. there is no trimming of data points far from the average results)
- IBA is seeking feedback from market participants[1] on how to approach “outlier” data

[1]*See feedback questions in the white paper IBA released introducing the Bank Yield Index on January 24, 2019.*

US Dollar ICE Bank Yield Index

Next steps

1. Refining Index methodology based upon feedback. Focus items include:
   - Curve construction methodology and “outlier” transaction data treatment[1]
   - Weighting of funding transaction data vs. bond transaction data
   - Publication of a rate during periods of market illiquidity[2]
2. Expanding the amount and volume of input data through:
   - Appropriately adjusting eligibility criteria
   - Additional eligible global banks providing primary market funding data
3. Responding to hedge accounting questions:
   - Need for cash flow hedging designation
   - Potential reduced desirability / need for use in fair value hedging relationships
4. Developing contractual agreements with global banks to obtain primary market funding data for the Index on an on-going basis
5. Publishing a statement on compliance with IOSCO principles

[1] *Regression method and outlier treatment are subject to refinement following stakeholder feedback*
[2] *Where fewer data points than a defined target threshold are available on a given day for a publication tenor (i.e. one, three, or six months), data points from previous days (maximum of five days) will be incorporated into the curve. If there are still insufficient data points (using up to five days’ data points), a contingency rate will be published based on the last rate derived using transaction data points and the standard methodology, adjusted for movements in risk free reference rates (e.g. OIS swaps, US Treasury yields, term SOFR [if available]).*

US Dollar ICE Bank Yield Index

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US Dollar ICE Bank Yield Index

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ATTACHMENT 2

Comments on the Bank Yield Index

David Bowman

- IBA has not established that they can produce this rate on an ongoing basis. The Bank Yield Index has the same issue as LIBOR in questions as to whether LIBOR panel banks will be willing to submit to it past 2021. Production of the Index assumes that banks will be willing to submit their transactions, even after they leave LIBOR, and no bank has signed a contract with IBA to do this.

  From page 2 of the IBA White Paper: There is no guarantee that IBA will continue to test the U.S. Dollar ICE Bank Yield Index, be able to source data to derive the Index or publish the Index in the future. Users of LIBOR should not rely on the potential publication of the U.S. Dollar ICE Bank Yield Index when developing and executing transition or fallback plans.

- it's not clear how this rate would behave or if it could even be produced in times of market stress – the times that it would be most needed. Even in the relatively calm funding conditions we see at present, the rate has a very small number of transactions underlying it and it frequently has to rely on lagged data to meet its low thresholds. If funding conditions grew more turbulent, there isn't any clarity that the rate could be produced or how far back it would have to go in lagging the data in order to be produced.

  Page 8: If the target number of transactions is not achieved for a maturity range associated with a publication tenor, then the administrator would not obtain and publish a setting for this tenor from the yield curve. The administrator would instead publish a contingency rate in respect of that tenor

- It seems likely that the Bank Yield Index is less accurate than LIBOR. The IBA test data shows some clear divergences from USD LIBOR, even though they are attempting to measure the same underlying market and are produced by the same administrator. They both can't be reliably and accurately representative.

  The Bank Yield Index will have added variability from the intermittent use of lagged data – on days with enough transactions not to rely on lagged data it may n days with fewer transactions where lagged data is used, and different lags will be used at different input maturities. There is also a wide dispersion of the underlying data, and it isn't clear that the pricing of bonds is equivalent to pricing on short-term wholesale funding – these bonds often have a lot of bespoke terms or embedded options that make them difficult to compare and that IBA doesn't attempt to control for and preliminary analysis indicates that the secondary bond market data has a different distribution from the wholesale unsecured transactions that underlie LIBOR, which would also add variability to the rate. The Index does not volume weight transactions, so small transactions can have an outsized impact, and the Index fits a continuous curve that ignores the fact that monetary policy moves discretely..

- It seems unlikely that the Bank Yield Index would ever be granted FASB hedge accounting status, and it should not be expected to develop a liquid (or perhaps any) derivatives market to support it.

  FASB's principles state that to be eligible to be included as a hedge accounting benchmark, the rate should be a risk-free rate. The Index is clearly not (LIBOR was included on the benchmark list at a time when it was being marketed as risk-free). The current IBA administrator has stated to many that spread of LIBOR into derivatives was the biggest mistake that market participants made with the rate. Presumably IBA would not make the same mistake with the Bank Yield Index.

- The ARRC developed criteria to assess viability of alternative reference rates which draws heavily from IOSCO principles for financial benchmarks. While innovations are welcomed, it is essential that they too are measured against those same criteria to ensure they are durable in the long run for end users. In particular the criteria related to benchmark quality – liquidity, transaction volume, resilience through periods of illiquidity and changes in regulatory approach are among the most critical criteria to deliver against.

  Transactions that can be used to calculate the bank yield index are limited and as noted in the position paper a 5 day lag has been necessary to hit the minimum threshold that ICE has determined. Additionally, there is a question as to what is the appropriate minimum threshold of daily activity that is acceptable – the $10 billion set by IBA is achieved only by mixing many different tenors ,two different and separate markets, and including lagged data, and is well below the standards set by the ARRC set as a criteria.