FEDERAL RESERVE BANK of NEW YORK

Reference Rates

Recent History

2013

- **International Organization of Securities Commissions** published a set of principles for financial benchmarks stating that benchmark rates should be:
  - Anchored in observable transactions entered into at arm's length between buyers and sellers
  - Resistant to manipulation through proper structure, governance, oversight, and control
  - Based on prices, rates, indices or values formed by the competitive forces of supply and demand

- **Financial Stability Oversight Council** recommended that U.S. regulators cooperate with foreign regulators, international bodies, and market participants to:
  - Promptly identify alternative interest rate benchmarks
  - Develop a plan to accomplish a transition to new benchmarks
  - Promote a smooth and orderly transition to alternative benchmarks

2014

- **Financial Stability Board** published proposals, plans, and timelines for:
  - The reform and strengthening of existing major interest rate benchmarks
  - Additional work on the development and introduction of alternative benchmarks
  - Development of a plan to accomplish a transition to new benchmarks

2017

- **Financial Conduct Authority** (FCA), the regulator of LIBOR, communicated that the FCA:
  - Had to exert significant pressure to hold banks on LIBOR panels
  - Was seeking a voluntary agreement with submitting banks to stay on the panel until the end of 2021
  - Will not compel LIBOR banks to provide submissions beyond 2021

LIBOR and Financial Stability

- USD LIBOR is estimated to be referenced in ~$200 trillion worth of financial contracts
- 95 percent of this exposure is in derivatives, but USD LIBOR is also referenced in an estimated:
  - $3.4 trillion business loans
  - $1.3 trillion retail mortgages and other consumer loans
  - $1.8 trillion floating rate debt
  - $1.8 trillion securitized products
- The official sector has become involved in LIBOR because most contracts did not envision the possibility that LIBOR could ever stop publication and do not have economically appropriate fallbacks in place for such an event
- Most legacy contracts will mature before 2021, but new contracts referencing LIBOR are being written every day
- Without preparation, a cessation of LIBOR would cause considerable disruption and would threaten financial stability

Estimated USD LIBOR Market Footprint by Asset Class[1]

		Volume (Trillions USD)	Share Maturing By: End 2021	End 2025	After 2030	After 2040
Over-the-Counter Derivatives	Interest rate swaps	81	66%	88%	7%	5%
	Forward rate agreements	34	100%	100%	0%	0%
	Interest rate options	12	65%	68%	5%	5%
	Cross currency swaps	18	88%	93%	2%	0%
Exchange Traded Derivatives	Interest rate options	34	99%	100%	0%	0%
	Interest rate futures	11	99%	100%	0%	0%
Business Loans[2]	Syndicated loans	1.5	83%	100%	0%	0%
	Nonsyndicated business loans	0.8	86%	97%	1%	0%
	Nonsyndicated CRE/Commercial mortgages	1.1	83%	94%	4%	2%
Consumer Loans	Retail mortgages[3]	1.2	57%	82%	7%	1%
	Other Consumer loans	0.1	---	---	---	---
Bonds	Floating/Variable Rate Notes	1.8	84%	93%	6%	3%
Securitizations	Mortgage -backed Securites (incl. CMOs)	1.0	57%	81%	7%	1%
	Collateralized loan obligations	0.4	26%	72%	5%	0%
	Asset-backed securities	0.2	55%	78%	10%	2%
	Collateralized debt obligations	0.2	48%	73%	10%	2%
Total USD LIBOR Exposure:		**199**	**82%**	**92%**	**4%**	**2%**

[1] Source: Federal Reserve staff calcuations, 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. [2] The figures for syndicated and corporate business loans do not include undrawn lines. Nonsyndicated business loans exlucde CRE/commercial mortgage loans.[3] Estimated maturities based on historical pre-payment rates

Alternative Reference Rates Committee

- The Alternative Reference Rates Committee (ARRC) was originally convened in November 2014 by the Board of Governors and Federal Reserve Bank of New York to:
  - Identify alternative USD reference rates that both fit the needs of the market and meet standards of best practice
  - Develop plans for the voluntary adoption of these rates
  - Identify best practices for contract robustness
  - Create an implementation plan with metrics of success and a timeline

- In June 2017, the ARRC selected the Secured Overnight Financing Rate (SOFR) as the rate that represents best practice for use in certain new U.S. dollar derivatives and other financial contracts

- In October 2017, the ARRC adopted a Paced Transition Plan, with specific steps and timelines designed to encourage adoption of SOFR

- The ARRC was reconstituted in March 2018 to:
  - Facilitate the much wider interest in mitigating risks related to LIBOR
  - Coordinate and track planning across cash and derivatives products
  - Support the transition to alternative reference rates
  - Address risks in legacy contract language

Alternative Reference Rates Committee

ARRC Members	
AXA	JP Morgan Chase & Co.
Bank of America	LCH
BlackRock	MetLife
Citigroup	Morgan Stanley
CME Group	National Association of Corporate Treasurers
Deutsche Bank	PIMCO
Federal National Mortgage Association	TD Bank
Federal Home Loan Mortgage Corporation	The Federal Home Loan Bank of New York
GE Capital	The Independent Community Bankers of America
Goldman Sachs	The Loan Syndications and Trading Association
Government Finance Officers Association	SIFMA
HSBC	Wells Fargo
Intercontinental Exchange	World Bank Group
ISDA	

Ex Officio Members of the ARCC
Commodity Futures and Trading Commission
Consumer Financial Protection Bureau
Federal Deposit Insurance Corporation
Federal Housing Finance Agency
Federal Reserve Bank of New York
Federal Reserve Board
Office of the Comptroller of the Currency
Office of Financial Research
Securities Exchange Commission
Treasury Department

SOFR: The Selected Alternative to LIBOR

- In April 2018, the Federal Reserve Bank of New York, in cooperation with the U.S. Office of Financial Research, began publishing the SOFR along with two other Treasury repo reference rates, following a public comment period

- SOFR is based upon trade-level data from various segments of the repo market, serving as a broad measure of the cost of borrowing cash overnight collateralized by Treasury securities

- In addition to serving as a potential alternative reference rate, SOFR provides market participants with greater transparency into an important segment of U.S. financial markets

- Characteristics of SOFR:
    - Fully transaction-based
    - Robust underlying markets
    - Closely correlated with other money market rates
    - Covers multiple repo market segments allowing for future market evolution

Parallel Efforts in Other Currency Jurisdictions

Jurisdiction	Working Group	Alternative Rate	Secured vs. Unsecured	Overnight vs. Term	Rate Administration
U.S.	Alternative Reference Rates Committee	Secured Overnight Financing Rate (SOFR)	Secured	Overnight	Federal Reserve Bank of New York
U.K.	Working Group on Sterling Risk-Free Reference Rates	Reformed Sterling Overnight Index Average (SONIA)	Unsecured	Overnight	Bank of England
Switzerland	The National Working Group on Swiss Franc Reference Rates	Swiss Average Rate Overnight (SARON)	Secured	Overnight	SIX Swiss Exchange
Japan	Study Group on Risk-Free Reference Rates	Tokyo Overnight Average Rate (TONA)	Unsecured	Overnight	Bank of Japan
Euro area	Working Group on Risk-Free Reference Rates for the Euro area	TBD	TBD	TBD	TBD

ARRC Paced Transition Plan

Step	Anticipated Completion
1. Infrastructure for futures and/or OIS trading in SOFR is put in place	CME will launch SOFR futures on May 7, 2018
2. Trading begins in futures and/or bilateral, uncleared, OIS that reference SOFR	By end of 2018
3. Trading begins in cleared OIS that reference SOFR in the current (EFFR) PAI and discounting environment	CME and LCH expect to offer SOFR OIS and basis swap clearing in Q3 2018
4. CCPs begin allowing market participants a choice between clearing new or modified swap contracts (swaps paying floating legs benchmarked to EFFR, LIBOR, and SOFR) into the current PAI/discounting environment or one that uses SOFR for PAI and discounting	Q1 2020
5. CCPs no longer accept new swap contracts for clearing with EFFR as PAI and discounting except for the purpose of closing out or reducing outstanding risk in legacy contracts that use EFFR as PAI and discount rate. Existing contracts using EFFR as PAI and the discount rate continue to exist in the same pool, but would roll off over time as they mature or are closed out	Q2 2021
6. Creation of a term reference rate based on SOFR-derivatives markets once liquidity has developed sufficiently to produce a robust rate	By end of 2021

Financial Contracts Need Robust Fallback Language

- Legacy contracts need to be amended

  - Derivatives
    - ISDA working on fallback protocol that would allow for an updated definition of LIBOR that contains a more robust backup if LIBOR is permanently discontinued

  - Cash products
    - Mortgages and other consumer products
    - Floating rate notes
    - Corporate loans
    - Securitizations

- New contracts need to start incorporating robust fallback language and eventually alternative reference rates