

Euro Short Term Rate Implementation (EuroSTR)

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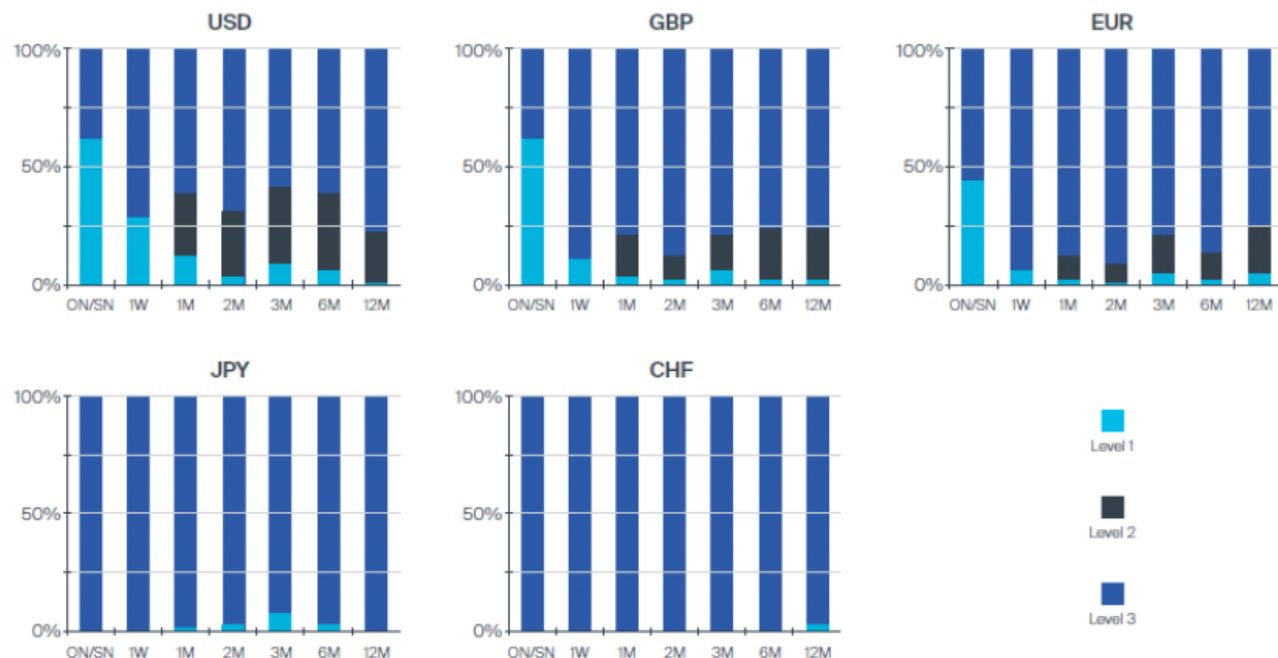
4 September 2019



Background to LIBOR

- LIBOR is a set of rates calculated by ICE Benchmark Administration Limited (IBA), based on submissions made by panel banks including Citi and is indicative of the rate at which banks borrow from each other
- “While the precise volume of transactions in markets underlying LIBOR is unknown, estimates show that, on a typical day, the volume of three-month wholesale funding transactions by major global banks was about \$500 million. This is a very low number compared to the \$200 trillion of financial contracts referencing USD LIBOR”* (Source: [ARRC](#))
- The recently introduced "Waterfall Methodology" seeks to base submissions on eligible transactions where possible, but where transaction based or derived submissions are not available the methodology relies on "expert judgment"

Report of the proportion of Panel Bank submissions used to calculate the Test Rates that were made under Level 1, Level 2 or Level 3 of the Waterfall Methodology for the period September 15, 2017 to December 15, 2017.



Source: https://www.theice.com/publicdocs/ICE_LIBOR_Evolution_Report_25_April_2018.pdf

WATERFALL METHODOLOGY

Level 1: Transaction-Based
Submissions based on eligible transactions

Level 2: Transaction-Derived
Submissions based on linear interpolation.

Level 3: Expert Judgement
Broker quotes and other market observations.

These graphs show that with the exception of USD & GBP LIBOR O/N tenors the vast majority of submissions are based on Level 3 of the waterfall methodology i.e. expert judgement.

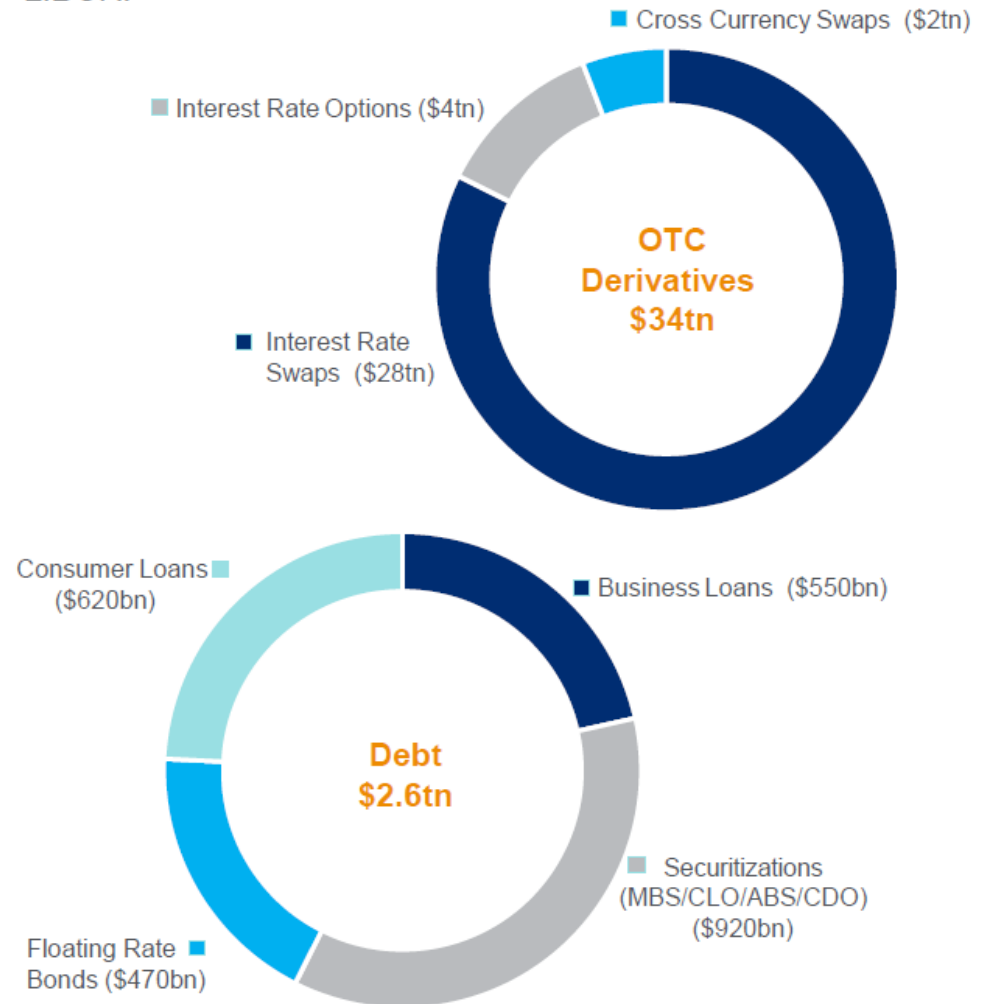
Sources: IBA Libor [page](#)

Product Impact

- As of mid-2018 around \$400 trillion worth of financial contracts referenced LIBOR¹;
- \$ LIBOR is estimated to be referenced in \$200 trillion worth of financial contracts; all of this activity is based on less than \$1 billion of eligible daily interbank \$ LIBOR transactions (FRB report²);
- Citi has exposure to LIBOR globally across business units and products, including but not limited to; corporate loans, commercial & residential mortgages, co-branded credit cards, securitised products, Citi-issued notes & derivatives

Estimated USD Libor Market... Maturing After End 2021

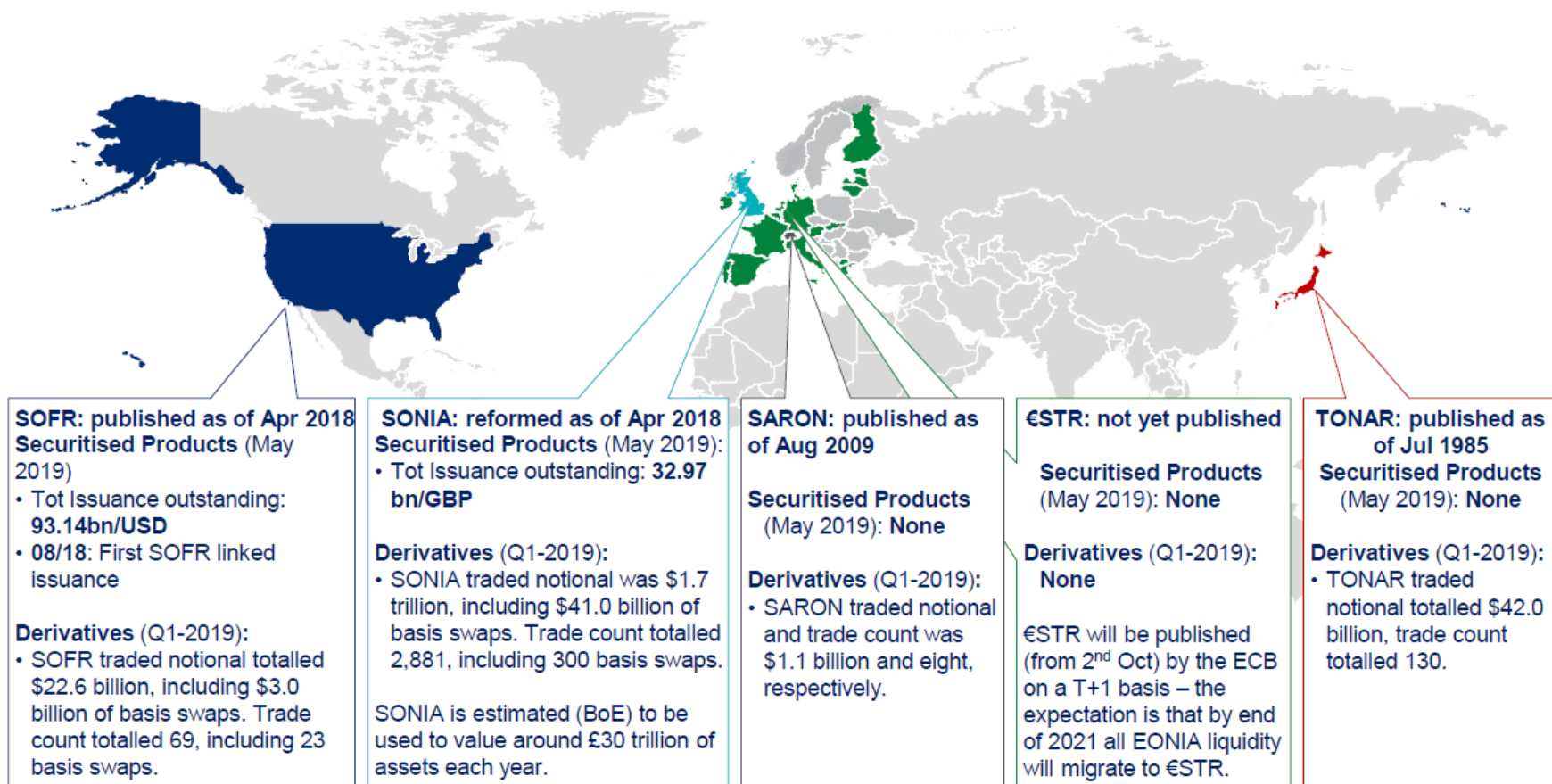
Of the \$200 trillion referencing USD LIBOR, it is estimated that \$36.6 trillion³ will still be outstanding after end of 2021 (date from which LIBOR could be discontinued). This number continues to grow as financial contracts entered into continue to reference LIBOR.



RFR Market Development

- The RFR markets are still in early stages of development; there are considerable differences across the jurisdictions as to which RFR-linked products are available to trade
- Some RFRs and their underlying markets are more mature, whilst others are still developing in terms of issuances and derivatives. EuroSTR will be published on the 2nd October 2019.

Citi issued its first \$1 billion (2 years maturity) SOFR indexed note offering in March 2019



Data above is sourced from: ISDA "Interest Rate Benchmarks Review: First Quarter of 2019" derivatives (this data does not cover the entirety of the global market) and Bloomberg (for issuances)

The initial priority is to implement EuroSTR for derivatives products

CONTEXT

- EuroSTR will be first published by the ECB on 2 Oct 2019
- **As per the EuroSTR Implementation Plan, initial activity in the EuroSTR market will be in the derivatives markets**, enabling development of liquidity on which an OIS curve can be established and a term rate developed to facilitate trading of EuroSTR cash products.
- **Revised EONIA will also need to be in place by 2 Oct 2019** to enable servicing of legacy EONIA contracts until transition activities are completed

OBJECTIVE

Therefore, by 2 Oct 2019, Citi needs to implement the new EuroSTR index to be used:

- To execute new derivatives instruments (swaps, futures and cash bonds)
- As a component in the reformed EONIA methodology (EuroSTR + 8.5 bps) for existing processes

SCOPE

The scope of the initial implementation and NPAC for new EuroSTR derivatives products is limited to the EMEA entities, businesses and products which conduct the majority of Euro derivatives market-making and hedging activity:

Legal Entities

CBNA London
CEP
CGML
CGME

Businesses

Rates and Currencies
Global Spread Products
(GSP)

Products

Swaps
Futures
Cash Bonds

Trading Venues

Eurex
ICE
CME

The revised EONIA methodology will need to be supported across all relevant entities, businesses and products.

EuroSTR implementation – Points to note

- The requirement for 2 October 2019 is for the setup of the EuroSTR index to support new trades only. **There is no requirement to support the switching of legacy trades to the EuroSTR rate at this stage**
- Client demand for execution of instruments using EuroSTR in Q4 2019 is uncertain but **significant volumes are not anticipated**

Appendices



Usage of EONIA by market participants – Balance sheet and valuation processes

Source: "[Report by the working group on euro risk-free rates on the transition from EONIA to ESTR](#)", Mar 2019 Revision.

Overnight Indexed Swaps	EONIA OIS used to hedge interest rate risk or take a position on interest rate expectations
Repurchase Agreements (Repos)	Repo desks can quote repos as a fixed rate, or as a variable rate versus EONIA Entering EONIA repos may help mitigate interest rate risk for buy-side players, as directly comparable with the unsecured market conditions
Debt Capital Markets	Presence of EONIA-linked issuances is very limited in Euro primary debt market However, investors have shown increased appetite to buy floating rate notes based on other risk-free rate benchmarks (e.g. SONIA and SOFR)
Commercial Paper and Certificates of Deposit	For short-term variable rate CP and CDs, EONIA is widely used
Collateral remuneration for cleared and non-cleared derivatives	Collateral remuneration through initial and variation margin calls for cleared derivatives and through CSAs are mostly provided in cash, which is mainly remunerated using EONIA
Default interest or penalty rates	In some euro area countries, by law or common market practice, default interest or penalty rates accrue on overdue amounts on a day-to-day basis. The actual reference rate used may be EONIA.
Non-standard interest rate period	EONIA used to interpolate an interest rate such as EURIBOR due over a non-standard interest period
Intercompany transactions	For longer-term intercompany agreements, EURIBOR is more prevalent. However, for daily intragroup cash sweeps and short term intercompany agreements, EONIA may be used.

Usage of EONIA by market participants – Balance sheet and valuation processes

Source: "[Report by the working group on euro risk-free rates on the transition from EONIA to ESTR](#)", Mar 2019 Revision.

Cash flow discounting or valuation

Interest rate paid on cash collateral for collateralised derivatives is defined as EONIA for the vast majority of Euro denominated transactions, including EURIBOR swaps

As a result, future cash flows of collateralised derivative trades including EURIBOR products are generally discounted using the OIS curve because EONIA is the rate at which they are funded

Clearing houses discount EUR derivatives at EONIA

Risk management - margin

Actual and historic price information for EONIA swaps is used as an important input into risk management models, including those used for quantifying initial margin for clearing purposes under EMIR and for bilateral counterparty risk management, for example in the context of the uncleared margin rules.

Risk management - concentration

From a liquidity perspective the observed cost of un-winding an EONIA portfolio may be used to assess the portfolio exit costs over and above a straightforward market move P&L. These liquidity costs may lead to additional margin requirements, particularly when positions are highly concentrated.

Stress testing

The largest observed historic moves in EONIA swap prices are commonly used either to calibrate the size of stress Report by the working group on euro risk-free rates on the transition from EONIA to ESTER – EONIA footprint 16 scenarios or directly as a real observed event, where such real observations may relate to events not captured within the lookback horizon for margin purposes.

Balance sheet management

Fund transfer pricing for intercompany loans are usually referenced at EONIA. Business areas or internal desks can be partially funded on a daily basis at a rate simply calculated as EONIA +/- spread.

Balance sheet management books (especially high-quality liquid asset (HQLA) buffers) are frequently managed using EONIA asset swapped bonds, especially for short-term papers.

Balance sheet management books are also frequent users of EONIA-based derivatives products, especially EONIA interest rate swaps (IRS).