



# IBOR Transition

Changes & challenges

May 2020

# Contents



1 Background

2 IBOR v/s ARR

3 Market Analysis

4 Key Impact Areas

5 India & IBOR Transition

# IBOR Transition

*Background*

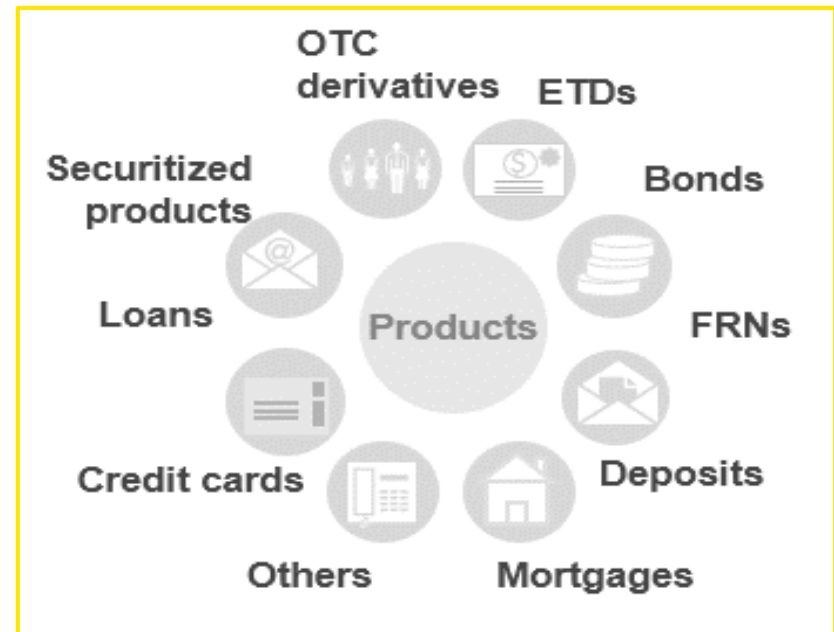
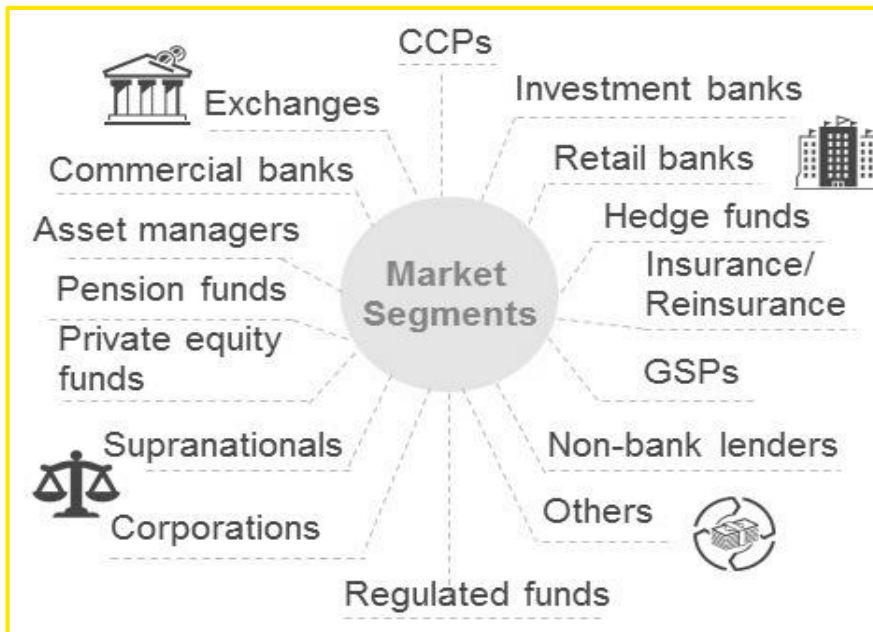
# IBOR Transition

## What is IBOR?

### What is IBOR?

- IBORs (Inter Bank Offered Rates) are the average rates at which 'Panel' banks would lend at in the wholesale unsecured Inter-Bank market;
- Rates quoted for 7 tenors 0/N to 12 months & for currencies: USD, GBP, EUR, JPY, CHF.

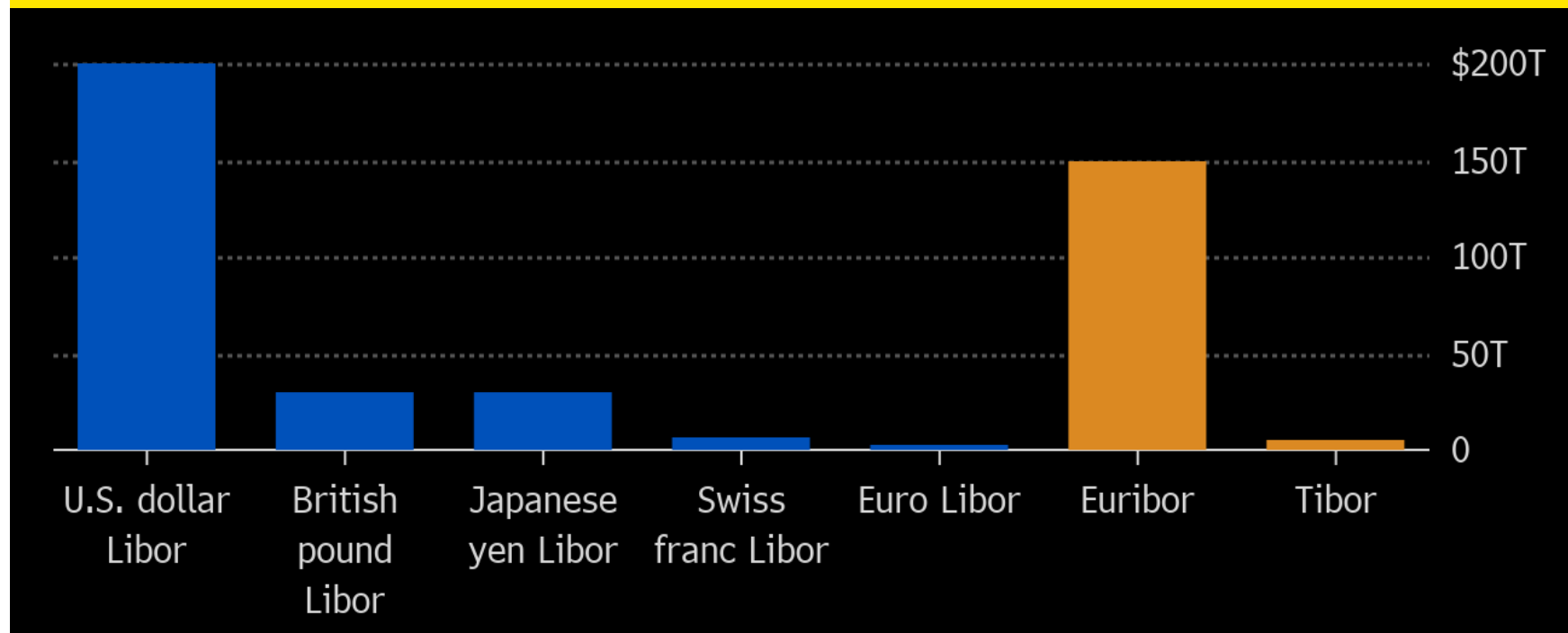
IBOR is used by a broad range of market participants in a wide range of products



# IBOR Transition

## Global IBOR Exposure & Key Activities

Notably, IBORs impact over \$370tn notional value of financial instruments across the globe



- As per initial estimates, around USD 1 trillion of exposure is tied to MIFOR which includes products such as ECBs, NRI Deposits, short term debt, derivatives etc.

### Key Activities linked to IBOR

- Discounting
- C/F Definition / Coupons
- Market Valuations
- Derivatives C/F, Triggers
- Clearing Activities
- Performance Benchmarks
- Penalties ref. Benchmark (time contracts)

Source: ISDA, Bloomberg

# IBOR Transition

## IBOR reform – Key Drivers & Initiatives?

### Drivers underpinning IBORs reform

**Decline in the liquidity** within the interbank unsecured funding markets



**Systemic risk** due to uncertainty surrounding durability of IBORs i.e. more reliance on IBOR estimation



**Charges of attempted manipulation** and false reporting by leading Panel Banks

Cases of manipulation by banks of major benchmarks and indices including IBORs have led to considerable censoring and initiation of reform by regulators globally to restore confidence in the reliability and robustness of benchmark rates.

### Key reform initiatives by regulators globally and resulting outcomes

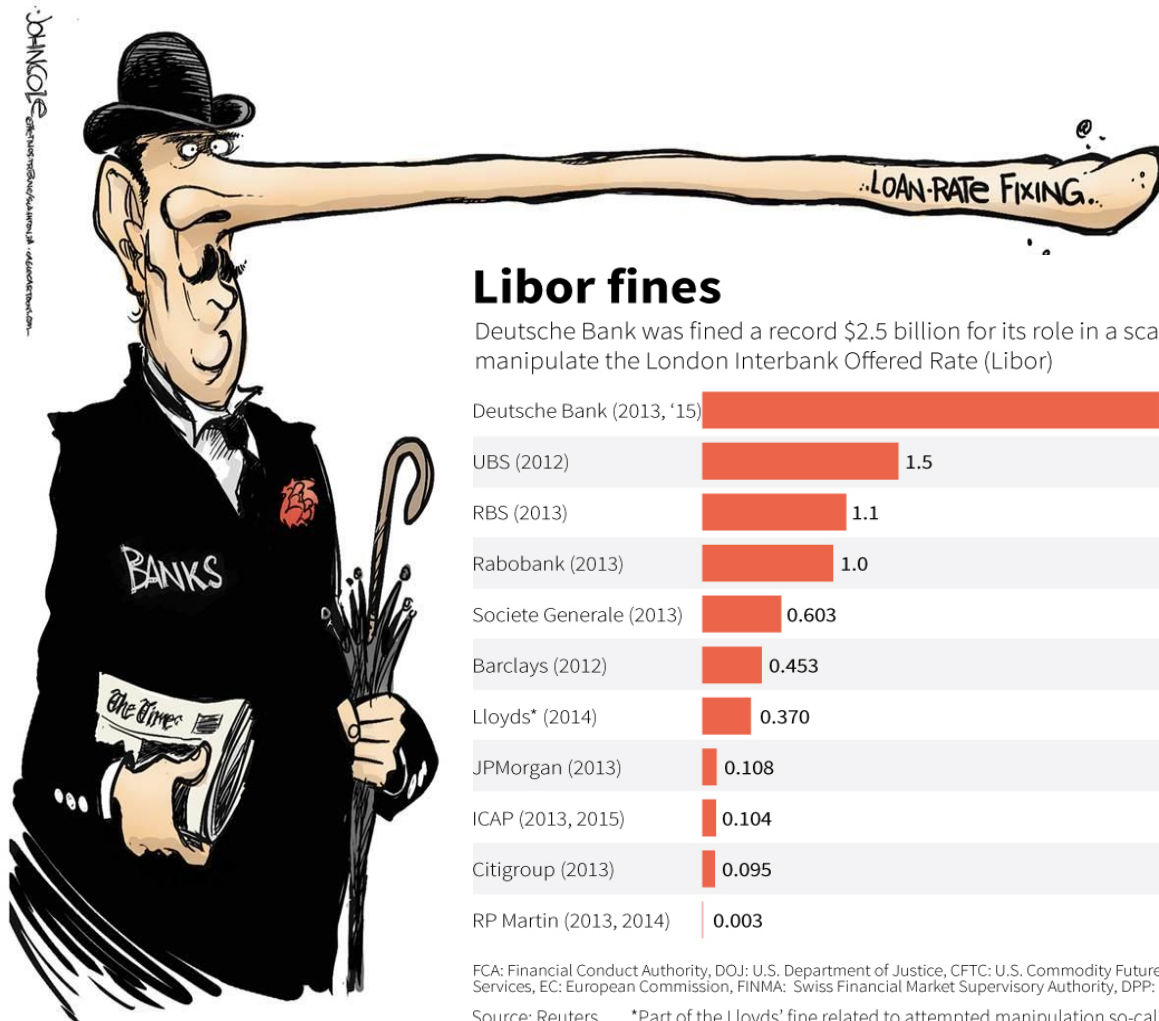
- ▶ Wheatley review of LIBOR 2012
- ▶ G20 asked the FSB to reform major interest rate benchmarks
- ▶ The official sector steering group (OSSG) established 2013
- ▶ IBOR market participants group (MPG) established 2014
- ▶ Other Series of Benchmark Reforms



- ▶ Recommendation to enhance existing IBORs and promote alternative nearly risk-free reference rates (RFRs).
- ▶ Working groups convened to propose alternative RFRs.
- ▶ Market participants have begun to assess the impacts

# IBOR Transition

## The LI(E)-BOR Scandal



### Libor fines

Deutsche Bank was fined a record \$2.5 billion for its role in a scam to manipulate the London Interbank Offered Rate (Libor)

Bank (Year)	Fine (\$ bln)	Regulators						
		FCA	DOJ	CFTC	NYDFS	EC	FINMA	DPP
Deutsche Bank (2013, '15)	\$3.5 bln	✓	✓	✓	✓	✓		
UBS (2012)	1.5	✓	✓	✓			✓	
RBS (2013)	1.1	✓	✓	✓		✓		
Rabobank (2013)	1.0	✓	✓	✓				✓
Societe Generale (2013)	0.603					✓		
Barclays (2012)	0.453	✓	✓	✓				
Lloyds* (2014)	0.370	✓	✓	✓				
JPMorgan (2013)	0.108					✓		
ICAP (2013, 2015)	0.104	✓		✓		✓		
Citigroup (2013)	0.095					✓		
RP Martin (2013, 2014)	0.003	✓		✓		✓		

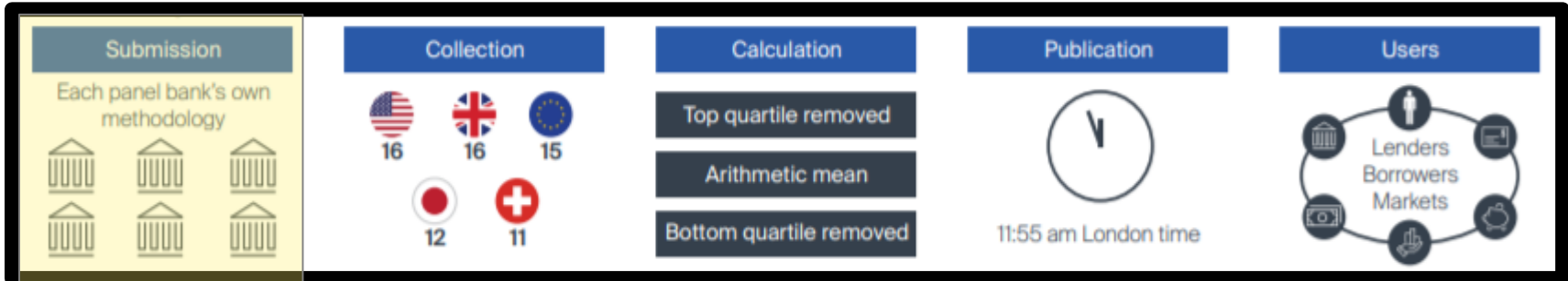
FCA: Financial Conduct Authority, DOJ: U.S. Department of Justice, CFTC: U.S. Commodity Futures Trading Commission, NYDFS: New York State Department of Financial Services, EC: European Commission, FINMA: Swiss Financial Market Supervisory Authority, DPP: Dutch Public Prosecutor.

Source: Reuters \*Part of the Lloyds' fine related to attempted manipulation so-called "repo" rates

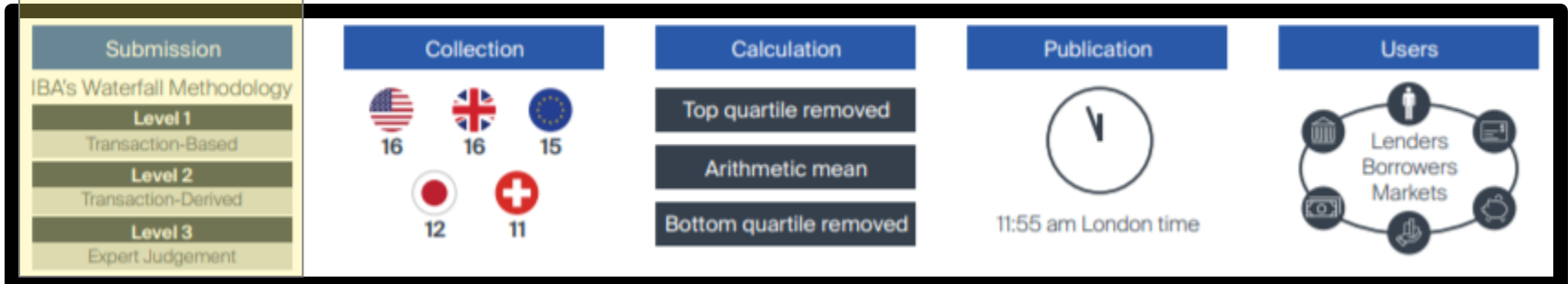
# IBOR Transition

*Changes to the IBOR calculation methodology to make it more robust*

## BBA LIBOR Calculations



## ICE LIBOR Calculations








**FCA to no longer force panel banks to Submit IBOR quotes post 2021 due to insufficient liquidity in the inter-bank markets**



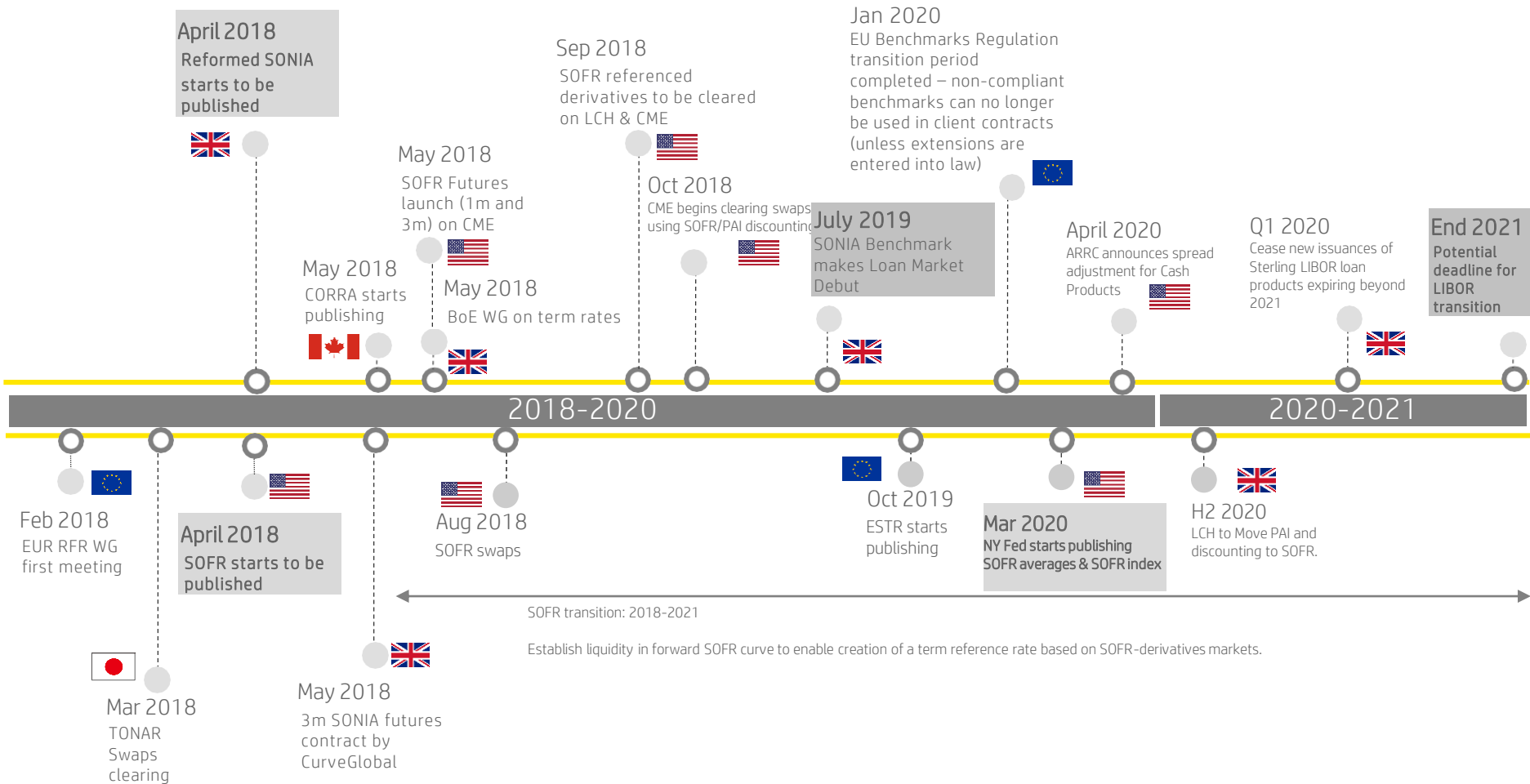
# IBOR – What are the Alternatives?

## Alternate Risk Free Rates (RFR)

Jurisdiction					
IBORs	USD LIBOR	GBP LIBOR	EURIBOR, Euro LIBOR	CHF LIBOR	JPY LIBOR, JPY TIBOR, EUROYEN TIBOR
Working Group	Alternative reference rates committee	Working group on sterling risk-free reference rates dear CEO letter	Working group on euro risk-free rates	National working group on Swiss franc reference Rate dear CEO letter	Study group on risk-free reference rates
Alternative RFR	<b>Secured overnight financing rate (SOFR)</b>	<b>Reformed sterling overnight index average (SONIA)</b>	Euro short-term rate (ESTER)	Swiss average rate overnight (SARON)	Tokyo overnight average rate (TONAR)
Description	<ul style="list-style-type: none"> <li>▶ <b>Secured</b></li> <li>▶ Fully transaction-based</li> <li>▶ Overnight, nearly risk-free reference rate that correlates closely with other money market rates</li> <li>▶ Covers multiple repo market segments, allowing for future market evolution</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Unsecured</b></li> <li>▶ Fully transaction-based</li> <li>▶ Overnight, nearly risk-free reference rate</li> <li>▶ Includes a volume-weighted trimmed mean</li> <li>▶ Dear CEO letters issued to banks/insurers in Sep 2018 and asset managers in Feb 2020</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Unsecured</b></li> <li>▶ In Sep 2018 ECB has announced that ESTER is chosen as ARR. Launched Oct 2019</li> <li>▶ Reflects the wholesale borrowing costs of euro area banks</li> <li>▶ Dear CEO letter issued by ECB to banks in Jul 2019</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Secured</b></li> <li>▶ Became the reference interbank overnight repo on 25 August 2009</li> <li>▶ Secured rate that reflects interest paid on interbank overnight repo</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>Unsecured, transaction-based</b></li> <li>▶ Uncollateralized overnight call rate market</li> <li>▶ The Bank of Japan calculates and publishes the rate daily using information provided by money market brokers, Tanshi</li> <li>▶ As an average, weighted by the volume of transactions corresponding to the rate</li> </ul>
Rate administrator	Fed. Res. Bank of New York	Bank of England	ECB	SIX Swiss Exchange	Bank of Japan

# IBOR Transition Roadmap

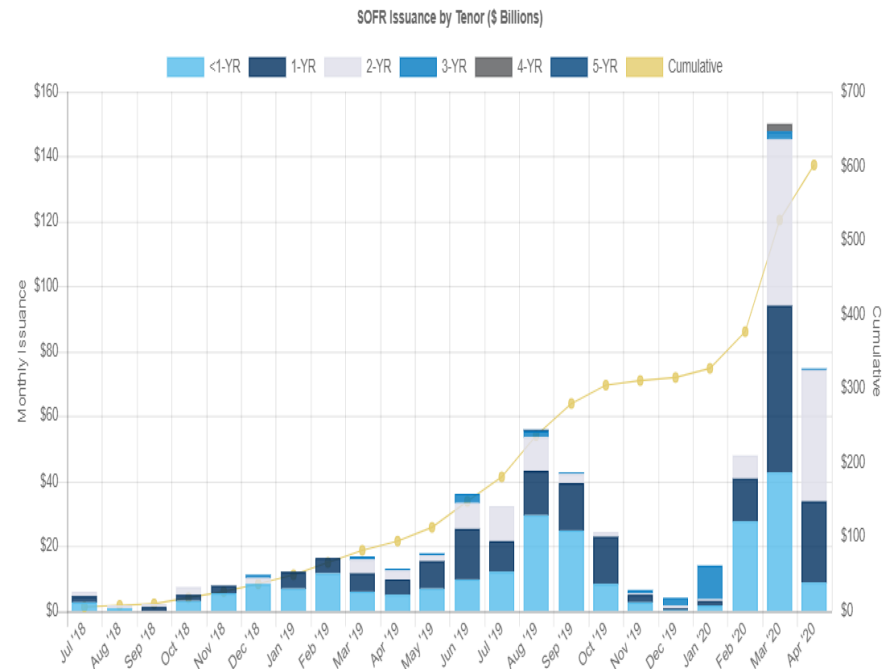
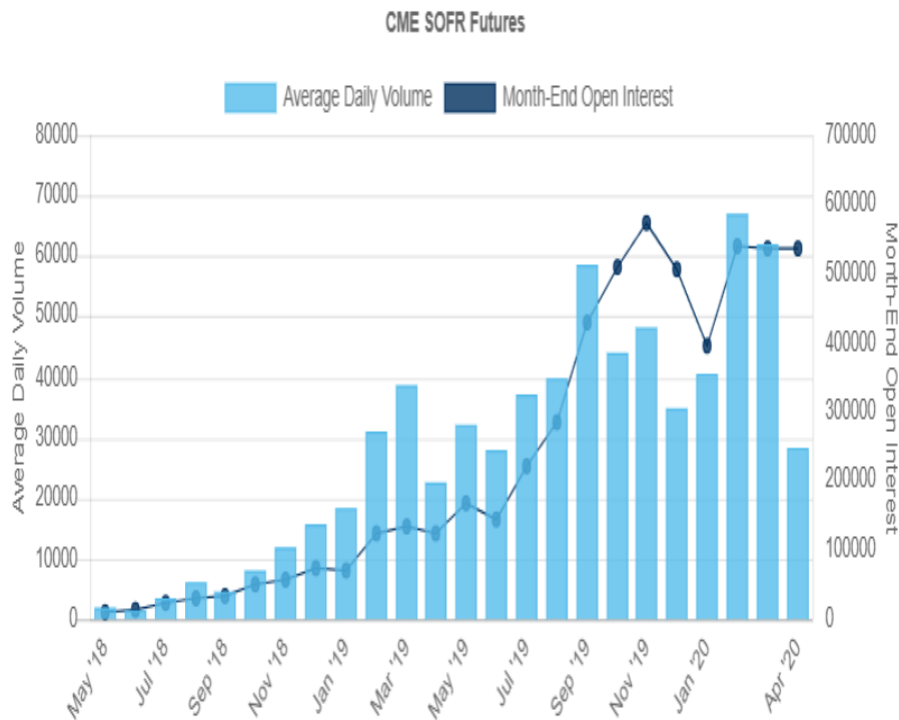
Timeline below illustrates the key milestones related to global benchmark reform.



# How are Markets evolving?

*Proactive, assessing options, ready to act upon market events and development*

- ▶ Future, Forward, swaps, loan and deposit markets are exponentially growing.
- ▶ Demand of ARR products from Corporate clients is increasing quickly.
- ▶ SOFR futures volumes is on upward trend. However, most of the futures are still less than 2 years



\*Data as on 30<sup>th</sup> April 2020 from CME Website

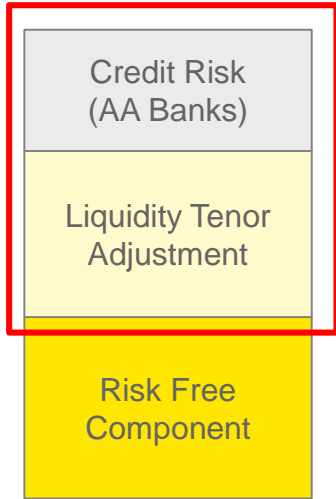
**IBOR v/s ARR**s

*A Technical Perspective*

# LIBOR vs ARR comparison

SOFR (USD - Secured Overnight Financing Rate)

## LIBOR

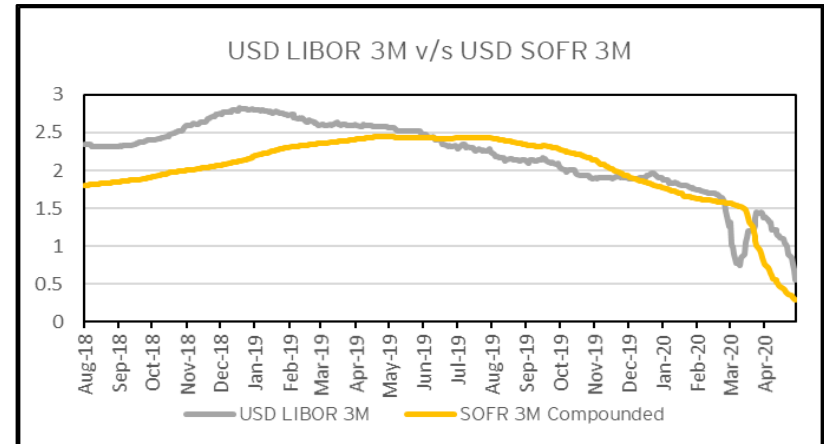
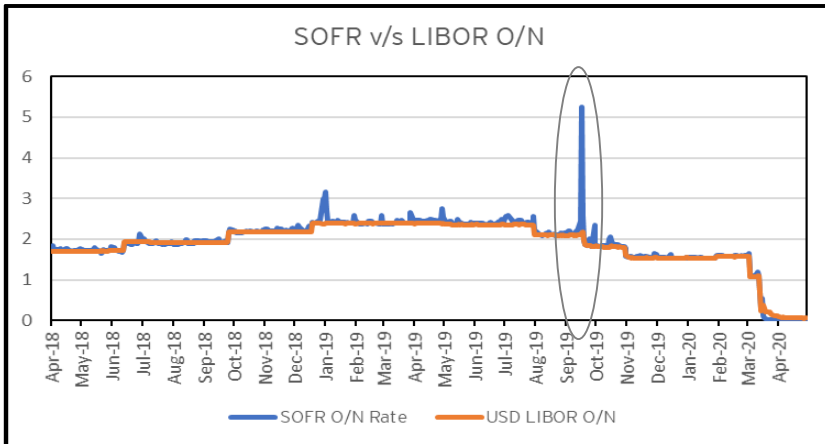
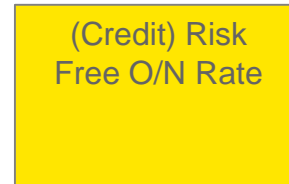


The longer the term, the more prominent will be the effect of **Credit Risk** and **Liquidity** Adjustments.

Risk Free Component (Credit Risk Free)

VS

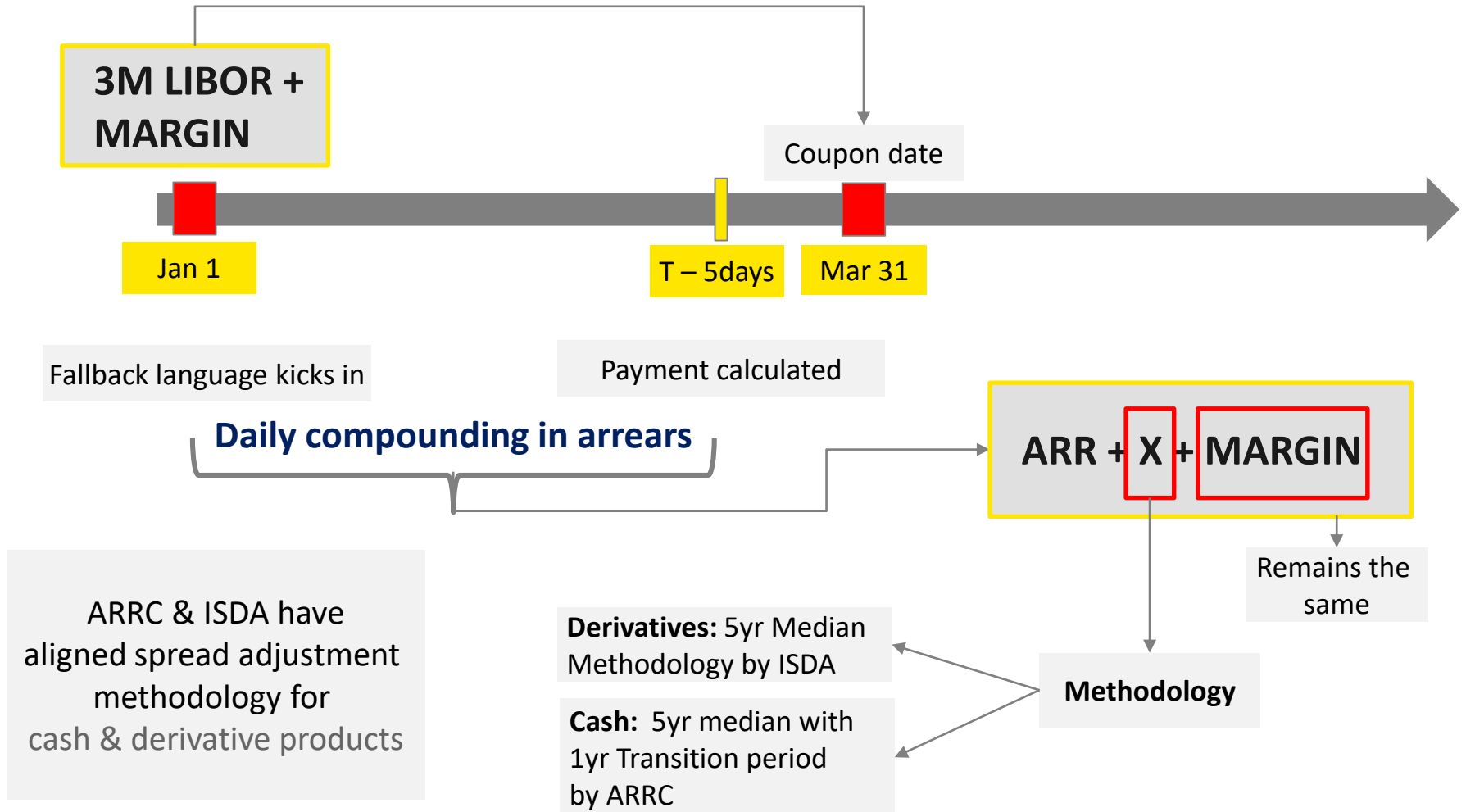
## SOFR



Source: FRED

# LIBOR -> ARR - How would it work?

*Based on current market developments*



**IBOR transition**

*Different perspectives & Impact*

# Financial Institutions

## High level functional impact areas

The schematic below outlines the functional areas that are mostly likely to be impacted by the transition from IBORs to alternative RFRs and should be the starting point for holistically assessing impacts.

Legal and Documentation Teams	Sales and trading	Market Risk	Credit Risk	Treasury	Finance and accounting	Tax	Operations
Documentation review	Pricing and hedging	Risk factor / time series	Exposure models (PFE and CE)	Hedging program	One time balance sheet valuation adjustment	Accelerated payments	Data management
Trade repapering	Market liquidity	VaR, Stress test and sensitivity models	Initial and variation margin models	Economic value of equity	Internal price verification	Revaluation of assets and liabilities	Collateral management
Restrike language	CVA / FVA / XVA		CCR	FTP methodology	Accrual adjustments	Tax reporting	Trade processing & confirmation
Trade confirmation design	Secured funding		Unsecured funding	Hedge accounting	Trade and position reporting	Settlements	
Industry template language	Curve management		Issuance restrike	Auditor onboarding	Operational management reporting	Asset servicing	
Term extraction & reference data	Client outreach and education		ALM	PnL calculation	Financial reporting	Reconciliations	
							Client outreach execution
Technology infrastructure							
Internal control framework							

Banks will have to assess the impact across other areas such as lending, retail, wealth management and securitization



# Valuation & Risk Management

## Key Impact & Challenges

New interest rate derivative models will be required for curve construction and pricing. Risk models and business models that rely on interest rate 'feeder' models will also be impacted.

### Firm-wide models impacted by transition



### Model development and validation

#### Additional considerations

- Capabilities to assess the impact of terminating legacy trades on the firms liquidity, funding and capital levels
- Valuation capabilities to support transfer of value analysis on legacy trades
- Evaluation of the impact of basis risk on existing hedges and reevaluate hedging strategies

# Asset Manager perspective

## *Key Challenges*

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### Products

Transition of existing contracts for loans and highly liquid fixed income products maturing beyond 2021 is expected to be the most significant transition challenge.

### Prospectuses

The range of ARR's will impact the product range available and, therefore, a greater variety and scope of prospectuses offered.

### Cash flow liquidity

The difference in timelines of implementation of various ARR's is likely to have an adverse impact on liquidity.

### Market liquidity

Availability and liquidity in ARR futures and their accelerated adoption in the markets is expected to be a critical milestone.

### Cross-currency implications

Differences between secured and unsecured ARR's across different currencies is likely to adversely impact liquidity in the cross-currency swap market.

### Infrastructure

A resulting significant overhaul of the operational and technology infrastructure of firms is expected to be required.

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# Technology, Accounting & Legal Perspective

## Key Impact

### Technology Impact

IT systems need to be upgraded for handling dual rate environment , system enhancements for ARR valuations etc

IBOR transition will eventually touch almost every aspect of front-to-back, FS-technology system flows.

#### Breadth of Impact

- ▶ Consumer
- ▶ Corporate
- ▶ Investment Banking
- ▶ Private Equity
- ▶ Wealth & Asset Management

#### Depth of Impact

- ▶ Legal
- ▶ Valuation
- ▶ Risk Management
- ▶ Accounting
- ▶ Tax
- ▶ Operations

#### Enterprise-Wide Technology Impact

Contracts

Custom Apps

Vendor Platforms

EUCs

Models

### Accounting Impact

#### 1 Revenue Recognition

*Assessment whether the revenues change due to change in key terms of the contract i.e. Interest Rates*

#### 2 Budgeting & Forecasting

*Processes for determining and detailing the business' long and short-term financial goals and cost allocation is based on the underlying IBOR rates*

#### 3 Hedge Effectiveness Testing & documentation

*Assessment of effectiveness of underlying hedges as cash flows may change due to change in interest rates*

### Legal Impact

#### 1 Contract Inventory

*An inventory of all contracts impacted by the transition will need to be created segregated by Line of Business*

#### 2 Fallback Language

*Fallback Language (based on industry standards) will need to be assessed & inserted in IBOR linked contracts expiring post-2021 or through a pre-cessation trigger.*

#### 3 Dispute Resolution Mechanism

*Potential legal disputes may arise due to inadequate fallback language in existing contracts and if appropriate procedures are not followed*

# IBOR Transition

*Impact on India*

# How does LIBOR transition impact India?

## *Understanding of LIBOR transition impact on Indian market*

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<b>Indian market exposure</b>	<ul style="list-style-type: none"><li>• As per initial estimates, around USD 1 trillion of exposure is tied to MIFOR which includes products such as ECBs, NRI Deposits, short term debt, derivatives etc.</li><li>• Transitioning from LIBOR will largely impact foreign currency loans and syndicated loans market than retail loans in India. The reason for this is because Indian banks pay LIBOR to borrow in dollars in the interbank market and then enter into currency swaps using MIFOR to get Indian rupees</li><li>• For corporate sector (in particular infrastructure and housing finance) the external commercial borrowings which are longer term contracts will be impacted the most</li></ul>
<b>Market Response</b>	<ul style="list-style-type: none"><li>• Large international banks are mostly ready and already transacting in ARRr</li><li>• Market volume and size in ARRr (SONIA / SOFR) is exponentially growing</li><li>• Regulators are closely monitoring and 'accelerating' the transition</li></ul>
<b>Industry Body/Regulator view</b>	<ul style="list-style-type: none"><li>• Indian Banks Association (IBA) has formed a working group on LIBOR transition and is in the process of developing a guidance note for banks</li><li>• IBA has advised borrowers with LIBOR exposures to conduct impact assessment to identify impacted areas, processes and contract systems.</li><li>• Additionally, IBA has sent a questionnaire to banks trading in MIFOR products to understand the basis of new benchmark that needs to be developed (MIFOR derived using USD LIBOR &amp; USD-INR FX forwards)</li></ul>
<b>Next steps for Banks</b>	<ul style="list-style-type: none"><li>• Undertake the initial impact assessment and size the challenge</li><li>• Rectify any critical system/data issues and do pilot products transition</li><li>• Estimate effort, scope and budgets for implementation</li><li>• Start the Implementation (in line with market developments)</li></ul>
<b>Risks of not being Ready</b>	<ul style="list-style-type: none"><li>• Not able to borrow Dollars in the interbank market, higher hedging costs, losses on renegotiation of contracts and operational expenses for borrowers</li><li>• Not being able to transact, calculate interest, account, hedge, etc. due to inadequate systems</li><li>• Losing customers and position in the market; potential litigations; adverse reputational impact, etc.</li></ul>

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# Appendix

# Sample SOFR Swap Structure on CME

CME Group offers clearing for SOFR-based interest rate swaps for both the outright OIS and Basis Swaps to facilitate trading between SOFR and the existing benchmarks.

Field	Description
Swap Types	<u>OIS</u> : Fixed versus SOFR <u>Basis</u> : USD ICE LIBOR versus SOFR EFFR versus SOFR
Floating Rate Index	USD-SOFR-COMPOUND
Maximum Maturity	30 Years
Settlement Convention	T+1
Forecasting and Discounting Curve	USD SOFR Curve
Price Alignment Rate	USD SOFR
Reset Calendar	US Gov Securities
Payment Calendar	USNY

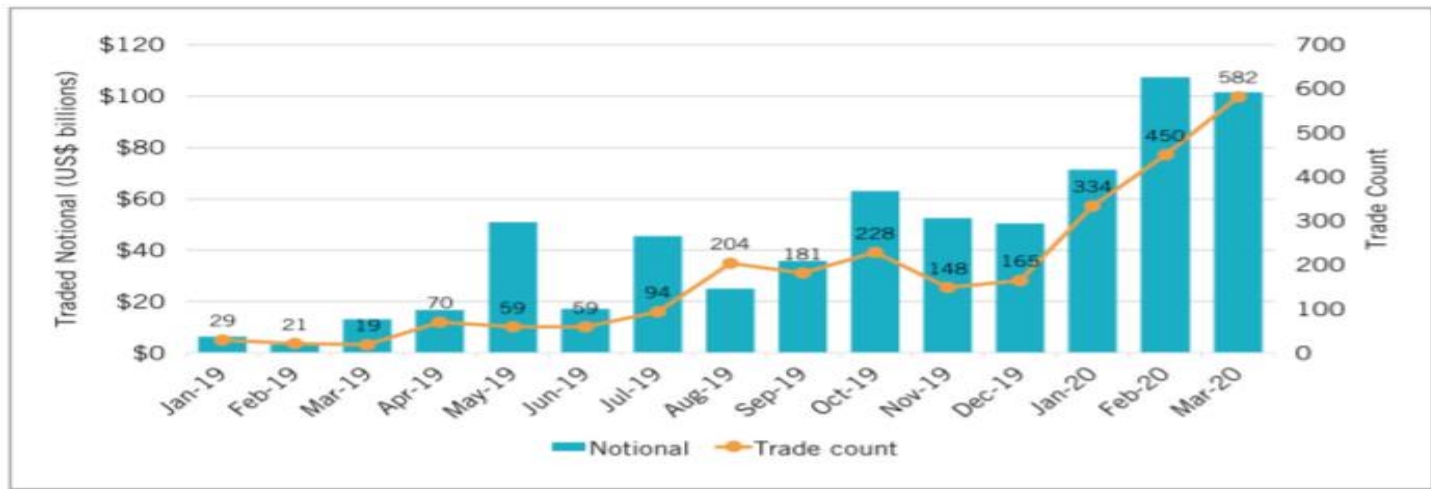
Source: CME

# SONIA & SOFR Traded Notional & Trade Count

SONIA Traded Notional



SOFR Traded Notional



Source – ISDA Quarterly Report



# Core Banking Perspective

## Key Challenges

Line of Business	Wholesale/Corporate Banking	Retail Banking	Treasury
Key Functions	<ul style="list-style-type: none"> <li>❑ Provides banking services to large clients, such as Banks, FIs, government agencies, large corporations, and real estate developers etc.</li> </ul>	<ul style="list-style-type: none"> <li>❑ Provides financial services to consumers as individuals like deposits, loans, personal banking, investment services etc</li> </ul>	<ul style="list-style-type: none"> <li>❑ Responsible for balancing and managing the daily cash flow and liquidity of funds within the bank</li> <li>❑ Handles bank's investments in securities, foreign exchange and cash instrument etc.</li> </ul>
Key Products	<ul style="list-style-type: none"> <li>❑ Corporate Loans, Term loans, Bill discounting, Working Capital loans, Short term deposits</li> </ul>	<ul style="list-style-type: none"> <li>❑ Individual deposits, Fixed &amp; Floating Rate Current Accounts</li> </ul>	<ul style="list-style-type: none"> <li>❑ Treasury Bills, Floating/Fixed rate bonds, Repos, IRS, CDS, Caps &amp; Floors etc</li> </ul>
Transition Challenges	<ul style="list-style-type: none"> <li>➤ Legacy Contract Remediation; Minimising value transfer</li> <li>➤ Client communication &amp; Education</li> <li>➤ New (ARR-based) product development</li> <li>➤ Relationship managers training on ARRs</li> <li>➤ Pricing &amp; cash-flow model updates for ARR-based products</li> <li>➤ Enhanced portfolio management &amp; credit review</li> <li>➤ System &amp; infrastructure Updates</li> </ul>	<ul style="list-style-type: none"> <li>➤ Contract Remediation</li> <li>➤ New (ARR based) product offerings</li> <li>➤ Pricing model Updates</li> <li>➤ System &amp; Infrastructure Updates</li> </ul>	<ul style="list-style-type: none"> <li>➤ Contract Remediation; Migration of legacy products</li> <li>➤ Client Communication &amp; Education</li> <li>➤ Fund Transfer Pricing, Asset Liability Management &amp; Rate Calculations model updates</li> <li>➤ System &amp; Infrastructure Updates</li> </ul>

# Trader Perspective

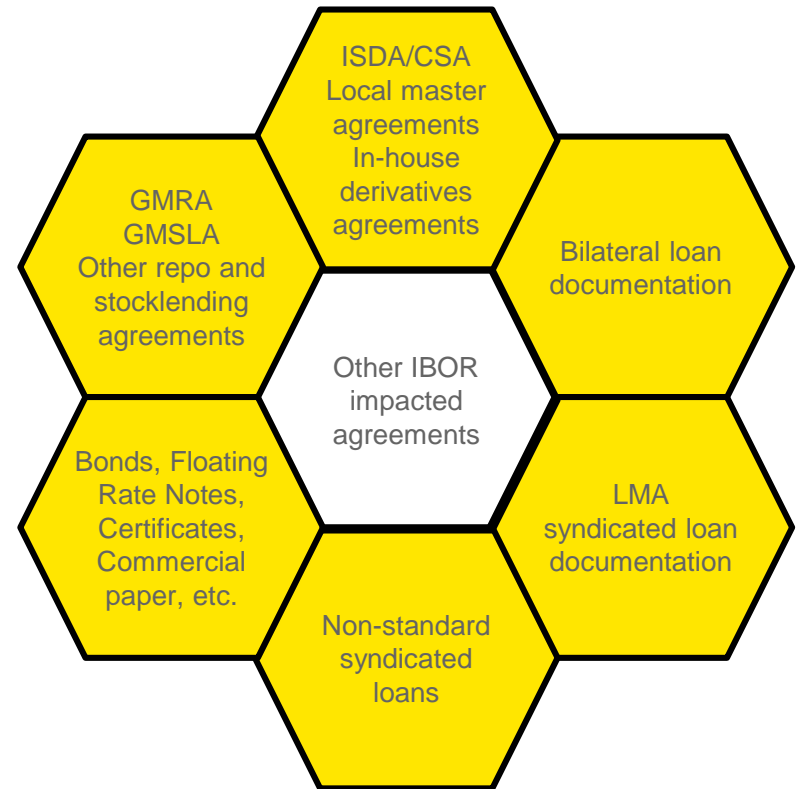
## Key Challenges

Trading Desks		
Markets Division	Treasury	Proprietary Trading
Function		
<ul style="list-style-type: none"> <li>Trade execution based on client request</li> <li>Majorly back to back positions</li> </ul>	<ul style="list-style-type: none"> <li>Asset Liability Management</li> <li>Responsible for Issuances, funding etc.</li> <li>Hedging Activities</li> </ul>	<ul style="list-style-type: none"> <li>Identifies profit generating opportunities in the market and takes positions within FI's risk appetite</li> <li>Takes care of Book Running</li> </ul>
IBOR Transition Challenges		
<ul style="list-style-type: none"> <li>Client request for new ARR based products</li> <li>Pricing &amp; Hedging of new ARR positions &amp; legacy IBOR positions</li> <li>MTM transfer in client &amp; hedged positions</li> <li>Client communication for changes to existing contracts</li> <li>Discounting/PAI Switch to ARRs</li> </ul>	<ul style="list-style-type: none"> <li>Illiquidity in legacy IBOR products in the book might increase funding costs</li> <li>Inclusion of liquid ARR-based products</li> <li>Hedging of bank's exposures to reduce interest rate risks</li> <li>Discounting/PAI Switch to ARRs</li> <li>Dual Rate Scenario during the transition</li> </ul>	<ul style="list-style-type: none"> <li>PnL impact due to increasing illiquidity in legacy trading positions</li> <li>Pricing of new ARR based products</li> <li>ARR Curve Construction</li> <li>Discounting/PAI Switch to ARRs</li> </ul>

# Asset Manager Perspective

*Impact on the current contracts & agreements*

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Thank You

