

The 18th Annual Conference of the Asia-Pacific Association of Derivatives

Application of KOFR in the Derivatives Markets

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Agenda

01. RFR in the Derivatives Market
02. RFR-Liked Derivatives Market
03. KOFR Overview
04. KOFR Derivatives
05. Conclusion

01

RFR in the Derivatives Market

LIBOR & Overnight Risk Free Rate

LIBOR Transition in the Derivatives Market

LIBOR & Overnight Risk Free Rate

☐ Overnight Risk Free Rate(RFR)

- ▶ Rate of interest used as a **benchmark** in financial transactions
- ▶ Designed to **exclude counterparty credit risk**
- ▶ Account solely for economic factors

☐ The Use of RFR

- ▶ The “risk free” term structure serves as a **key input** to the **pricing of derivatives**
- ▶ For defining the **expected growth rates of asset prices** in a risk-neutral world
- ▶ For determining the **discount rate for expected payoffs** in this world

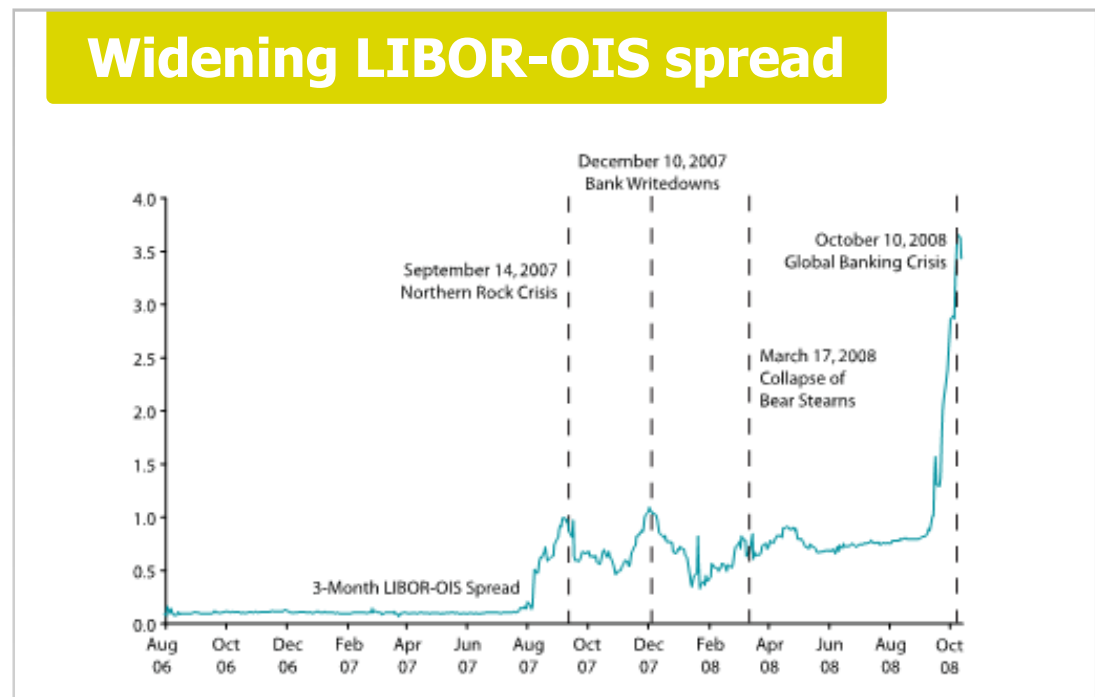
LIBOR & Overnight Risk Free Rate

▣ LIBOR as the risk free rate

- ▶ Used as a **benchmark** to gauge **funding costs** and **investment returns**
- ▶ Used as a **reference rate** for **derivatives pricing**

▣ LIBOR-OIS spread

- ▶ Around 10 bp in Aug 2007
- ▶ 85 bp on Sep 2007
- ▶ 108 bp on Dec 2007
- ▶ 365 bp on Oct 2008



Source: The LIBOR-OIS spread as a summary indicator

LIBOR & Overnight Risk Free Rate

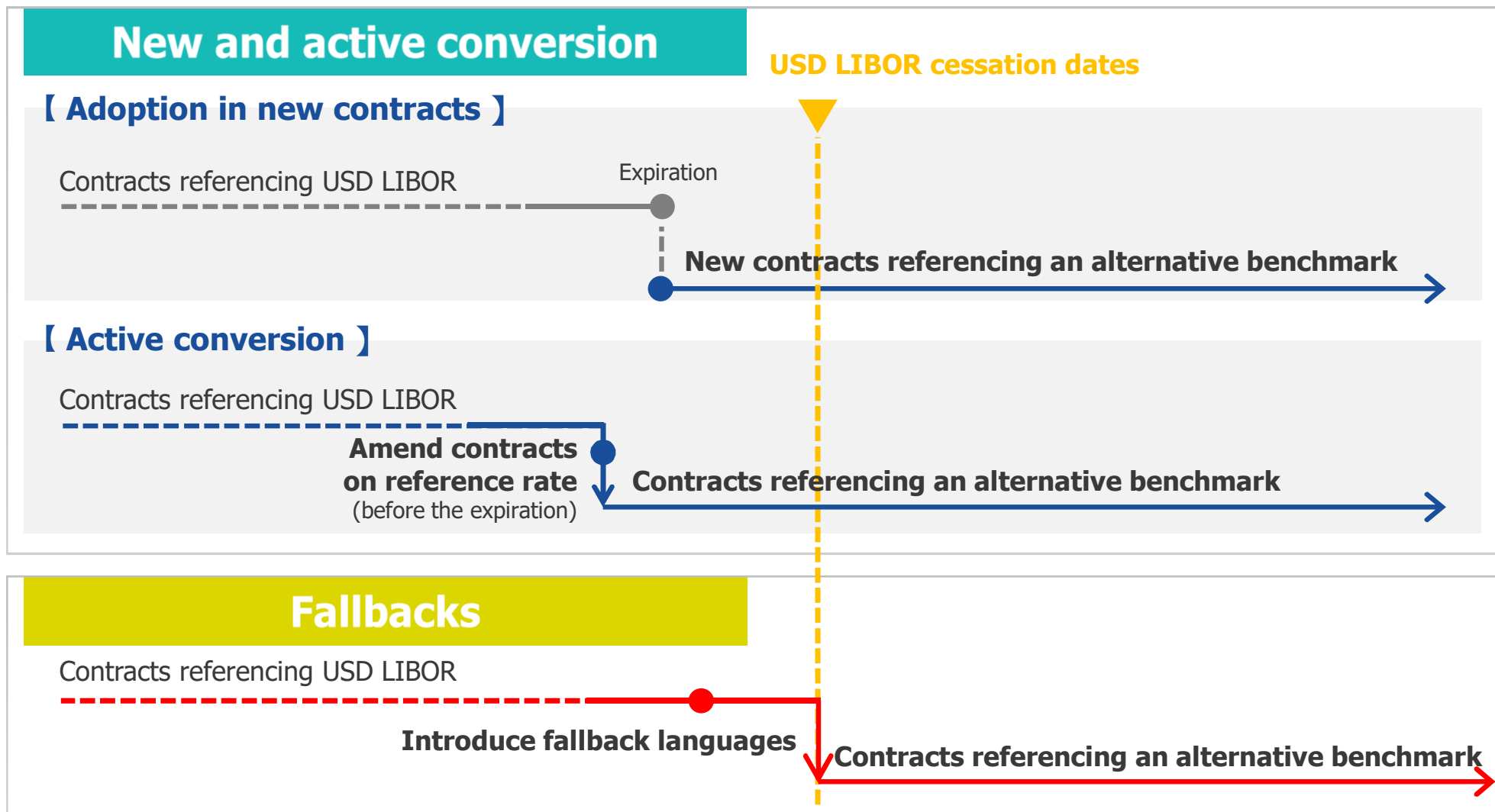
LIBOR Transition: Global Interest Rate Benchmark Reform

- ▶ International standard setting bodies (IOSCO, BIS, etc) joined in a coordinated effort toward reference rates reform in the wake of the LIBOR scandal
- ▶ Regulatory authorities in each jurisdictions identified alternative benchmark rates and best practices to support the transition of IBOR

Country	Alternative RFR	Administrator	Description
US	SOFR	FRB NY	Secured rate that covers multiple overnight repurchase market segments
UK	SONIA	BOE	Unsecured rate that covers overnight wholesale deposit transactions
EU	ESTR	ECB	Unsecured rate that captures the overnight wholesale deposit transactions
Japan	TONA	BOJ	Unsecured rate that captures overnight call rate market

LIBOR Transition in the Derivatives Market

LIBOR transition in OTC and ETD market



LIBOR Transition in the Derivatives Market

▣ Necessary actions in OTC market

01 Discounting and PAI switch to new RFR

02 Pricing and valuation of IRS NPV in the event of the LIBOR cessation

▣ Transition progress: ISDA's work

The "IBOR fallbacks supplement"

Published supplement 70 to the 2006 ISDA definitions

The "IBOR fallbacks protocol"

Launched the ISDA 2020 IBOR fallbacks protocol

LIBOR Transition in the Derivatives Market

▣ Transition progress: Key CCP LIBOR transition

- ▶ Broadly reference 2006 ISDA definitions
- ▶ Create an implementation plan and change CCP rules

▣ Transition progress: CME/LCH's plan

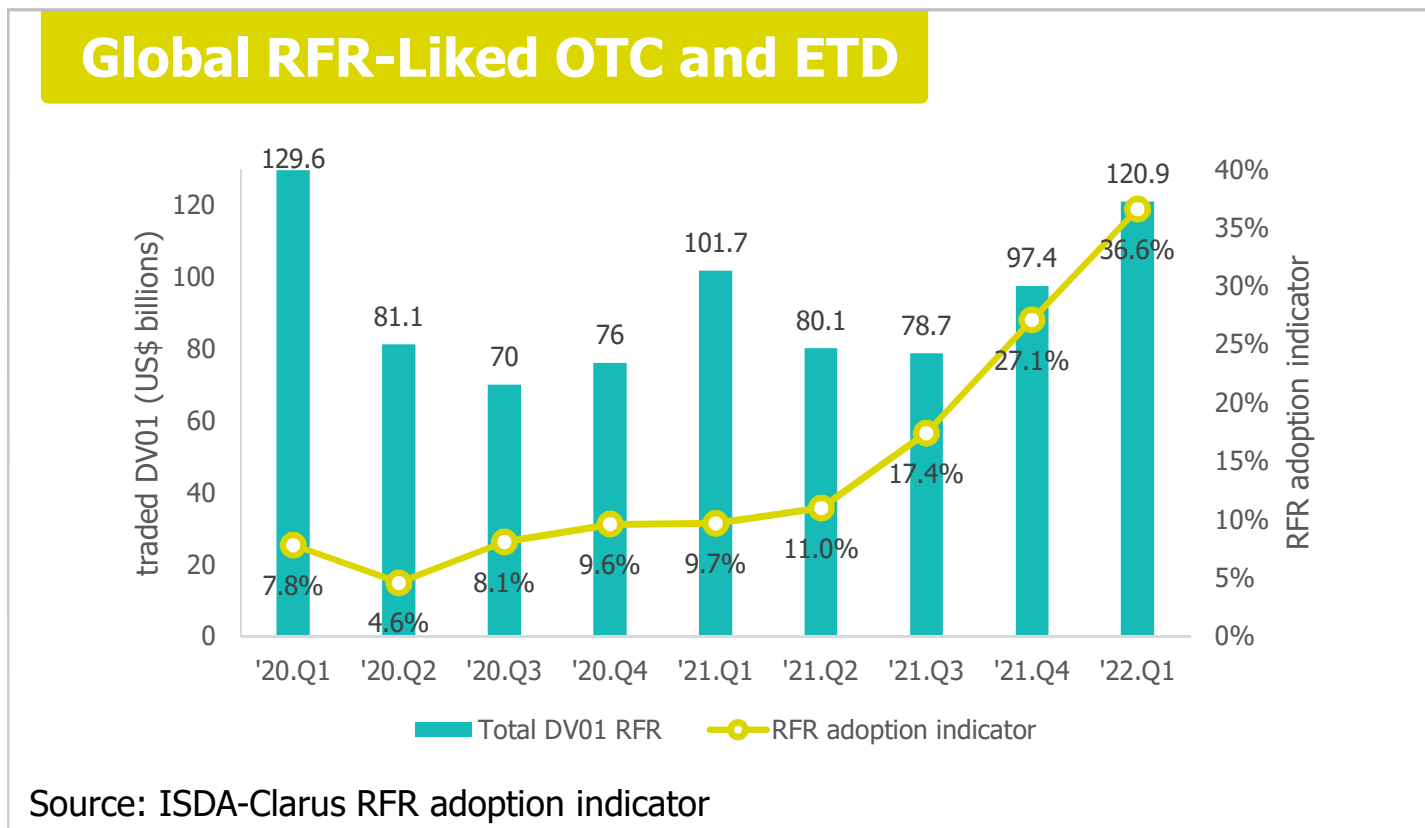
- ▶ Use SOFR for PAI/discounting of new swap contracts going forward
- ▶ Modify outstanding swap contracts to replace EFFR with SOFR for PAI/discounting

Conversion process

- Exchange a cash compensation(the diff in valuation between the two discounting regimes)
a risk compensation(in the form of at market EFFR vs. SOFR basis swaps)

LIBOR Transition in the Derivatives Market

Transition progress



US and UK launched "SOFR/SONIA first initiative" in June 2021,
which accelerated the shift to RFRs

02

RFR-Linked Derivatives

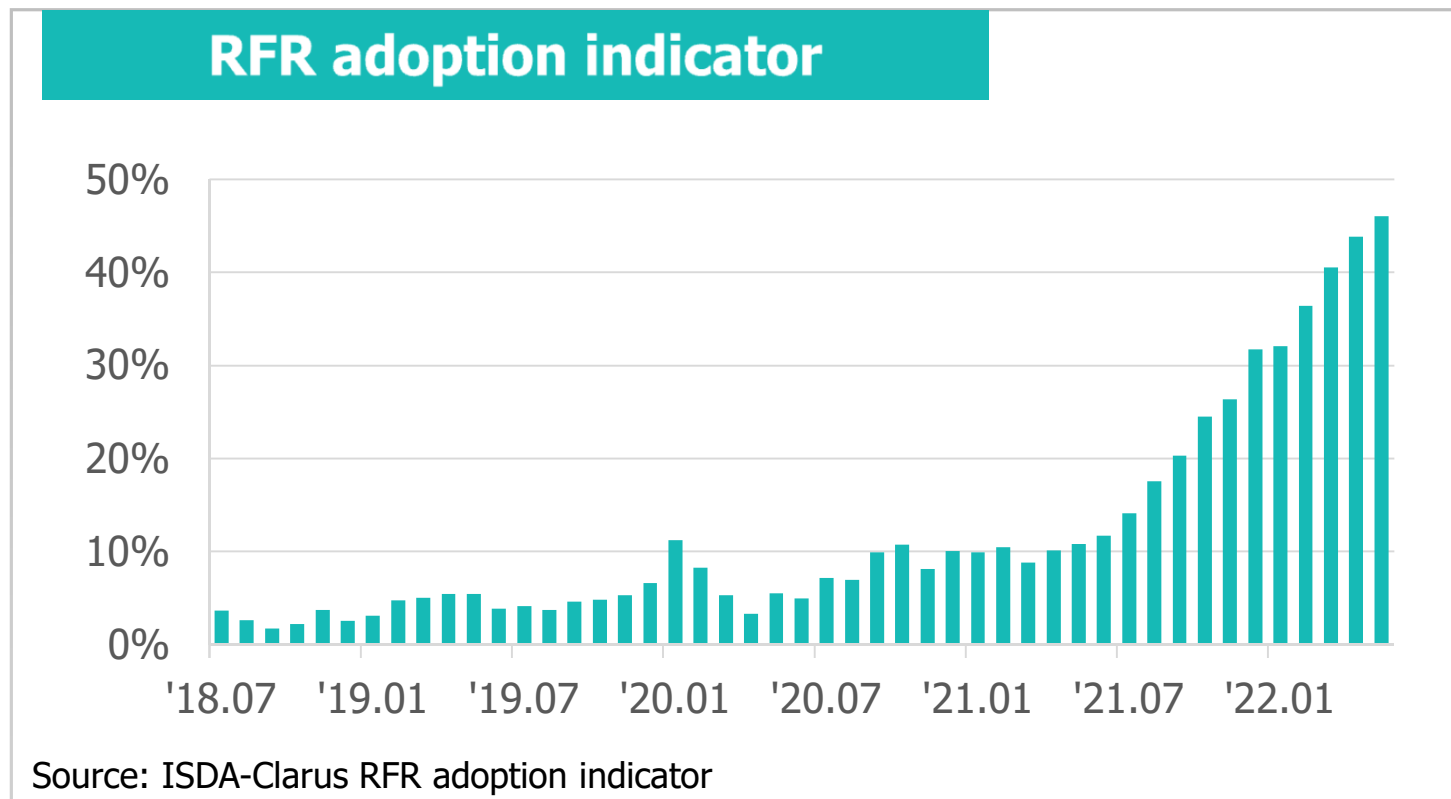
RFR-Linked OTC and ETD

The Role of RFR-Linked Derivatives

RFR-Linked OTC and ETD

▣ RFR-linked OTC IRD

- ▶ Use RFR as a reference rate of RFR swap
- ▶ OIS referencing RFR increased



RFR-Linked OTC and ETD

▣ RFR-linked exchange traded IRD

- ▶ RFR-linked futures, options, and swap futures are listed and traded

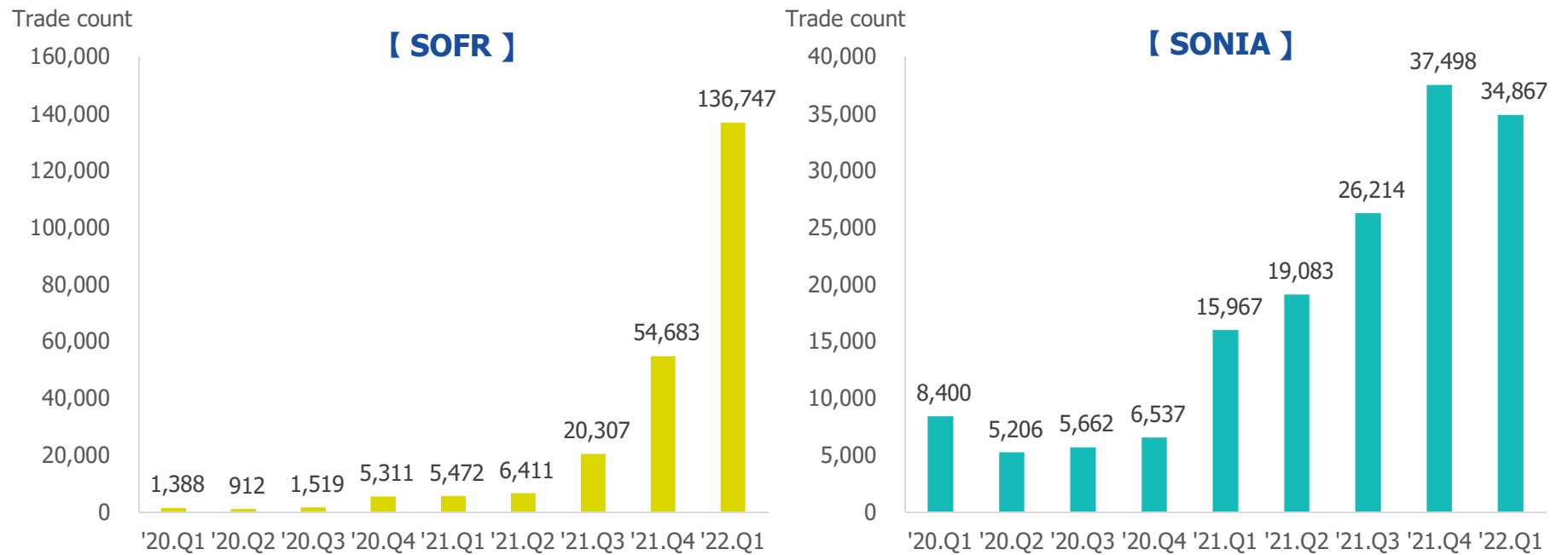
RFR-linked ETD		
Alternative RFR	Exchange	Product
SOFR	CME	CME 1 & 3month SOFR futures
	ICE	ICE futures Europe 1 & 3month SOFR index futures
SONIA	ICE	1 & 3month SONIA futures
	LSEG	CurveGlobal 1 & 3month SONIA futures
		CurveGlobal million 1 & 3month SONIA futures
	CME	Quarterly IMM SONIA futures
AONIA	ASX	ASX 30 day interbank cash rate futures
CORRA	TMX	1 & 3month CORRA futures

RFR-Linked OTC and ETD

RFR-linked exchange traded IRD

- ▶ Trading volume of RFR-linked ETD continue to grow at a rapid pace

Trading volume of SOFR and SONIA futures



Source: DTCC SDR

The Role of RFR-Linked Derivatives

▣ The role of RFR-linked derivatives in global market



Project market's expectations about future monetary policy

OIS rates as measures of monetary policy expectations



Accelerate early adoption of RFR in the financial markets

- Issue RFR-linked floating rate notes
 - Promote the RFR based OIS trading
-



Facilitate estimation of term rates of tenors

e.g. CME term SOFR reference rates, ICE term SONIA reference rates

03

KOFR Overview

KOFR Overview

▣ "Korea Overnight Financing Repo Rate, KOFR"

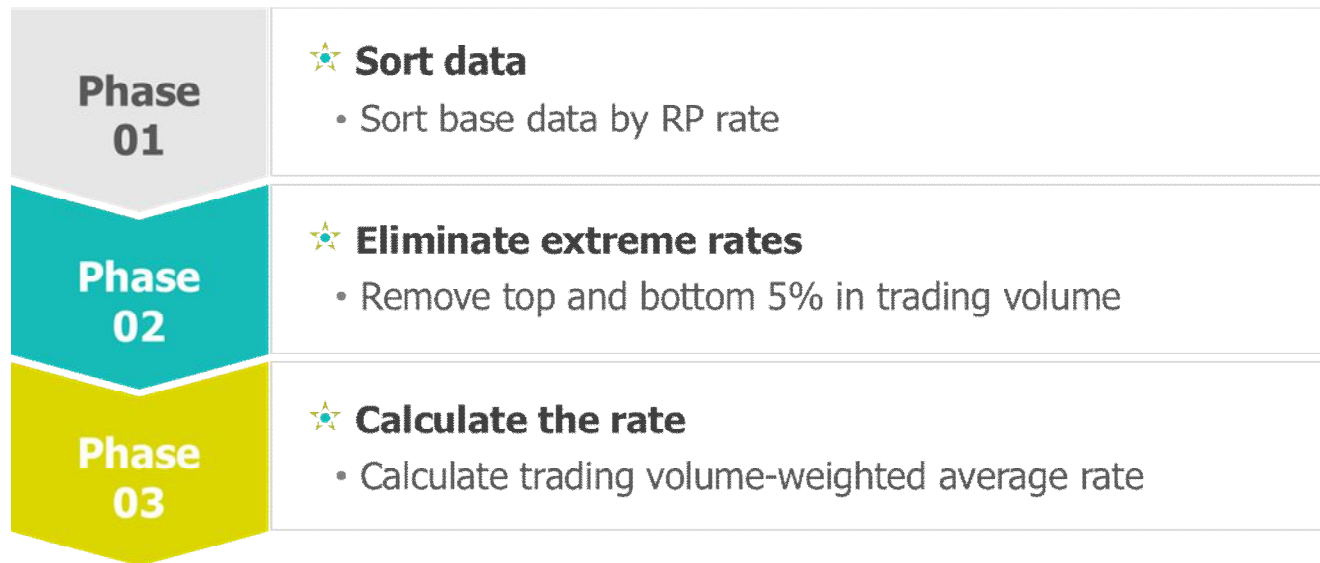
- ▶ **Alternative reference rate** KOFR
- ▶ **Market** over-the-counter inter-institutional repurchase agreements(RP) market
- ▶ **Collateral, term, currency** Government bond, monetary stabilization bond / overnight(business days) / Korean Won(KRW)
- ▶ **Calculation cycle** calculated and disclose on the next business day using base data from the reference date
- ▶ **Administrator** Korea securities depository(KSD)

KOFR Overview

☐ KOFR calculation method

- ▶ **Calculation method** weighted average after removing extreme values from the trading volume(purchase amount)

- ▶ **Calculation order**



- ▶ **Decimals** 0.000%(rounded to 4 decimal places)

04

KOFR Derivatives

KOFR Futures

KOFR OIS

KOFR Futures

Contract specification

- ▶ **Product name** Three-month KOFR futures
- ▶ **Price quoting method** 100 – KOFR 3-month compound interest rate
- ▶ **KOFR 3-month compound interest rate** annual interest rate calculated for daily KOFR during the reference period of the product(3 months)

$$\text{Average rate for 3 months} = \left[\frac{365}{N} \left\{ \prod_{i=1}^x \left(1 + \frac{R_i}{100} \times \frac{d_i}{365} \right) - 1 \right\} \right] \times 100$$

N : # of days during reference period

x : # of KOFR calculation reference days

R_i : KOFR on calculation reference day

d_i : # of days R_i is applied ($\sum_{i=1}^x d_i = N$)

KOFR Futures

▣ Contract specification

- ▶ **Reference period** from the third Wednesday(included) of the month, which is three months before the delivery month of the product, to the third Wednesday(not included) of the delivery month
- ▶ **Trading unit** KRW 1 billion
- ▶ **Tick size** 0.005
- ▶ **Listed contracts** four quarterly delivery month contracts + four non-quarterly delivery month contracts(consecutive months)
- ▶ **Final settlement price** compounded daily KOFR for 3 months(reference period)

KOFR Futures

▣ Market highlights

- ▶ **Launch date** Mar 28, 2022
- ▶ **Live contracts** Jul 2022, Aug 2022, Sep 2022, Oct 2022, Nov 2022, Dec 2022, Mar 2023, Jun 2023
- ▶ **Trading volume** barely traded after launch

KOFR Futures

▣ Hedging example

Hedge short-term interest rate

Sell Three month KOFR
futures



Hedge risk of rising
interest rates

Buy Three month KOFR
futures



Hedge risk of declining
interest rates

Hedge floating rate loan

If yield curve expected
to flatten or invert



Stack short hedge in
nearby futures

If yield curve expected
to steepen



Stack short hedge in
deferred futures

KOFR Futures

▣ Hedging example

Hedging swaps

Fixed rate payers exposed
to risk of falling rates



Buy Three month KOFR
futures

Fixed rate receivers exposed
to risk of rising rates



Sell Three month KOFR
futures

KOFR Futures

▣ Recommendations for active, liquid KOFR futures market



Facilitating a wide use of RFR across cash products

- Issue RFR linked bonds
 - Apply RFR floating rate
-



Encourage the use of RFR linked bond

- Evaluating collaterals
 - Calculating credit risk
-



Enhance market risk netting rules

- RFR futures and CD-linked IRS / FRA
- RFR futures and KTB futures

KOFR Futures

▣ Recommendations for active, liquid KOFR futures market



Permit hedging accounting to RFR

- Hedging relationship between RFR futures and CD linked IRS
-



Encourage large banks to engage in more RFR linked trading

- RFR futures, RFR OIS trading led by large banks
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Introduce market maker incentive program

- Evaluating primary dealer
- Designating open market operation institutions

■ Considerations for OIS market establishment

Positive factors

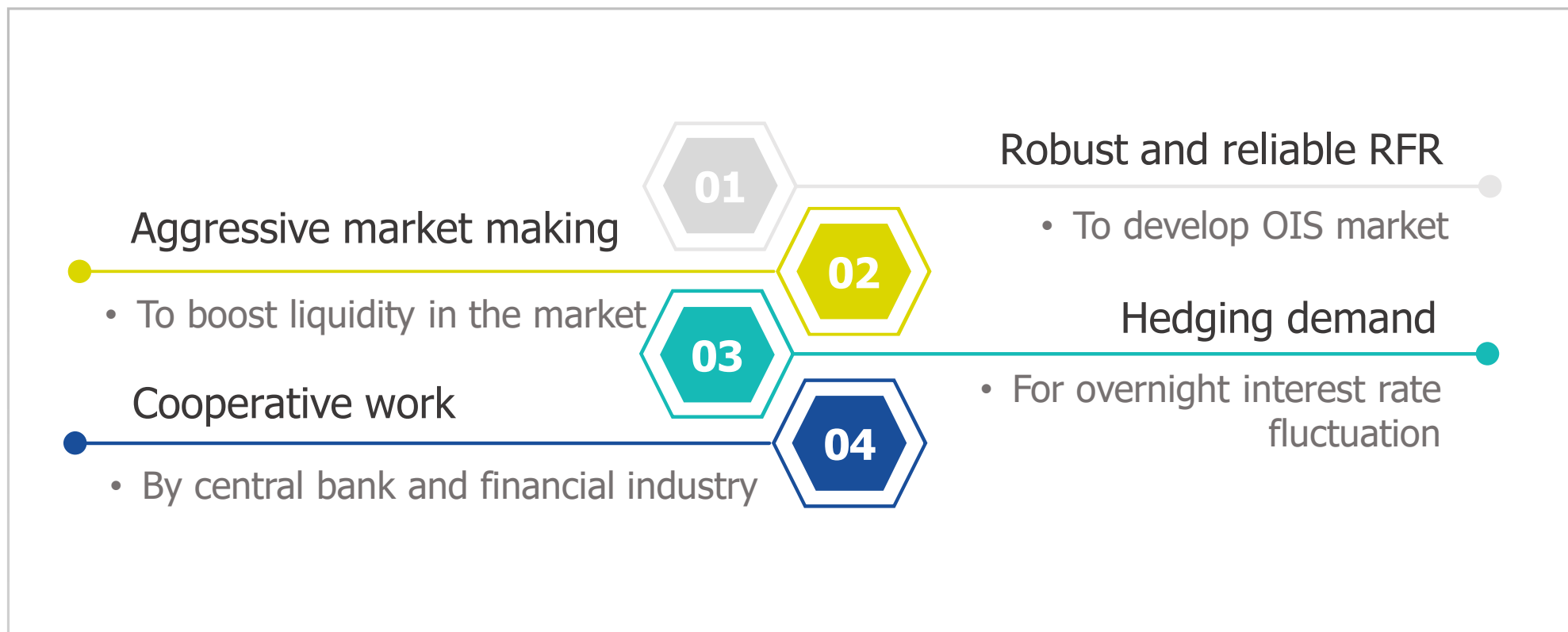
- Surging interest rate volatility
- Changing market conception about OIS market
- Listing of RFR futures
- Apply uncleared margin rules

VS.

Negative factors

- Premature short-term interest rate market
- Lack of policy guidance on reference rate
- Unharmonized market convention
- Issues on RP market / Burden of early participation in OIS market

▣ Lessons learned from advanced markets



Recommendations for establishing KOFR OIS market

Deep and liquid KOFR OIS market

**Establishing
working group**

- Continued, active communication among market participants

**Offering
incentives**

- Monetary incentives
- Tax rebates
- Educational programs

**Maintaining
market liquidity**

- Conversion of new IRS contracts to KOFR-linked OIS

**Enhancing
the role of CCP**

- Conversion of CD-linked IRS to KOFR-linked IRS
- OIS clearing

05 **Conclusion**

Concluding Remarks

Concluding Remarks

01

Early adoption of KOFR in the market

Global status Transition to RFR in the financial markets
positioning of RFR as a global standard

Actions needed swift responses to adapt changes in the global markets
to minimize disadvantages created by regulation gaps

02

Golden time for KOFR futures in the market

Global status Recent US & UK interest rate hikes
→ surge in SOFR & SONIA futures trading activity

Actions needed create market conditions for adopting KOFR futures
as a risk management tool

Thank You

