LIBOR Fallback Proposal for CME Eurodollar Futures and Options

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Agenda

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[2] CME Group remains engaged with market participants, industry bodies, and regulatory authorities regarding -IBOR fallbacks, and will continue to promote industry standards for the orderly transition from -IBORs to corresponding alternative reference rates as and when such transition may be required. We reserve the right to make necessary adjustments to our proposed approach based on, among other things, consultations with our clients. We will continue to keep all participants informed throughout the process.

LIBOR Fallback Considerations

UK Financial Conduct Authority (FCA), US Federal Reserve Board, and the US Commodity Futures Trading Commission (CFTC) warn of likelihood of discontinuation of LIBOR after 2021. They urge:

- *rapid adoption of alternative benchmarks (e.g., SOFR in US)*
- *standardization, improvement, and strengthening of fallbacks for existing LIBOR-reference contracts, to take effect in the event of LIBOR cessation.*

LIBOR Fallback Considerations

At the request of global regulators, ISDA completed several consultations on fallback approaches for OTC Derivatives. ISDA's recommended framework comprises three chief elements:

- **Fallback Trigger:** Public statement by benchmark administrator (e.g., IBA Ltd for LIBOR) or regulatory supervisor (e.g., UK FCA) which states that (a) the administrator has ceased or will cease to provide the relevant -IBOR permanently or indefinitely and (b) there is no successor administrator.[1]

- **Replacement Rate:** One of two inputs to calculation of the LIBOR fallback value is the floating rate benchmark value based on the designated alternative risk-free interest rate (RFR) (e.g., SOFR for USD LIBOR). Results of the ISDA consultations have confirmed preference for the 'compounded setting in arrears rate' https://www.isda.org/a/0LPTE/2019.09.18-Anonymized-ISDA-Supplemental-Consultation-Report.pdf

- **ISDA Spread Adjustment:** The second input to calculation of the LIBOR fallback value is the difference between such LIBOR and its corresponding (term-equivalent) RFR-based replacement rate. Responses to the ISDA consultations indicate broad-based preference for the 'historical mean/median approach' as the ISDA spread adjustment.

ISDA USD LIBOR Fallback Rate	**=**	**SOFR compounded in-arrears**	**+**	**ISDA Spread Adjustment**

Footnote 1: On May 16, 2019, ISDA published a separate consultation on an additional category of "pre-cessation" trigger, i.e., a statement by a regulatory supervisor that an -IBOR is no longer sufficiently representative of its underlying market. ISDA is still working on recommending path forward for this trigger.

Eurodollar Futures Fallback Proposal

There is an existing alignment in the underlying interest rate periods of Eurodollar and 3-month SOFR futures:

- An expiring Eurodollar (ED) futures contract cash-settles to 3-Month USD LIBOR on the contract expiration date. 3-Month USD LIBOR out of quarterly IMM Wednesdays spans an 89-92 day period, depending on the relevant calendar months, the applicable bank holiday schedules, and the applicable Modified Following day-count conventions.
- An expiring 3-Month SOFR (SR3) futures contract cash-settles in arrears to daily compounded SOFR during its contract reference period, spanning from one Mar/Jun/Sep/Dec Quarterly IMM Wednesday to the next. This period most commonly is 13 weeks (91 days), though occasionally 12-week or 14-week periods occur.

Given the general alignment between these contractual periods of interest rate risk and guided by the principles of maintaining market stability and promoting effective risk management, in the occurrence of a fallback trigger:

- **We propose to assign one SR3 futures contract to replace each corresponding adjacent ED futures contract, in the occurrence of a fallback trigger, with the assignment price determined as follows**[2]

SR3 Futures Assignment Price	**=**	**ED Futures Price**	**+**	**Spread Adjustment** **(aligned with ISDA methodology)**

- *ED Futures Price is the most recent daily settlement price*
- *Spread Adjustment is a value corresponding to 3-Month USD LIBOR, aligned with the ISDA Historical Mean/Median methodology (for which parameters are expected to be finalized in 2019), with applicable values set at the time of the fallback trigger.*

See Slide 3 for Footnote 2

Eurodollar Futures Fallback Proposal - Example

SR3 Futures Assignment Price	=	ED Futures Price	+	Spread Adjustment (aligned with ISDA methodology)

Example: Upon occurrence of a fallback trigger, a June 2022 ED futures contract would be assigned to a June 2022 SR3 futures contract, according to a pre-defined method

	ED Future Daily Settlement Price	+	Spread Adjustment (bps) (aligned with ISDA methodology)	=	SR3 Future Delivery Price
Jun 2022	**97.65**		**21.38**		**97.8638**
Sep 2022	**97.63**		**21.38**		**97.8438**
Dec 2022	**97.595**		**21.38**		**97.8088**

Eurodollar Options Fallback Proposal

Initial Observation: Positions in options on ED futures could be converted into corresponding options on SR3 futures by amending the original ED option strike prices in accord with the formula on Slide 6. However, this would result in non-standard strike prices different to the standard listed strike prices for SR3 options. Infrastructure for exchange-traded derivatives does not support efficient and transparent trading of options with such non-standard strike prices.

Fallback Plan: In the occurrence of a fallback trigger, ED option positions would 'nominally' remain (listed alongside standard-strike SR3 options), continuing to trade after the fallback trigger. Upon exercise of an expiring 'nominal' ED option under these circumstances – including auto-exercise at expiry – the resultant 'synthetic ED futures contract' would convert immediately into the corresponding SR3 contract, in accord with the formula shown on Slide 6

- ❑ While all ED futures would be converted into corresponding SR3 futures, if and when a fallback trigger occurs, as described on Slide 6, the conversion of ED options to SR3 options would be for risk and exposure purposes and would lead to exercise into SR3 futures.
- ❑ CME would support all necessary inter-commodity spreads between ED options and SR3 options to facilitate market-led switching before and after a fallback trigger were it to occur.

The volatility surfaces of Eurodollar and SOFR options may differ prior to a trigger event. Based on client feedback, and given their expectation of the increased likelihood of volatility surface convergence as the probability of a trigger increases, we do not incorporate this differential in the current proposal, which also avoids model dependency.

Eurodollar Options Fallback Proposal

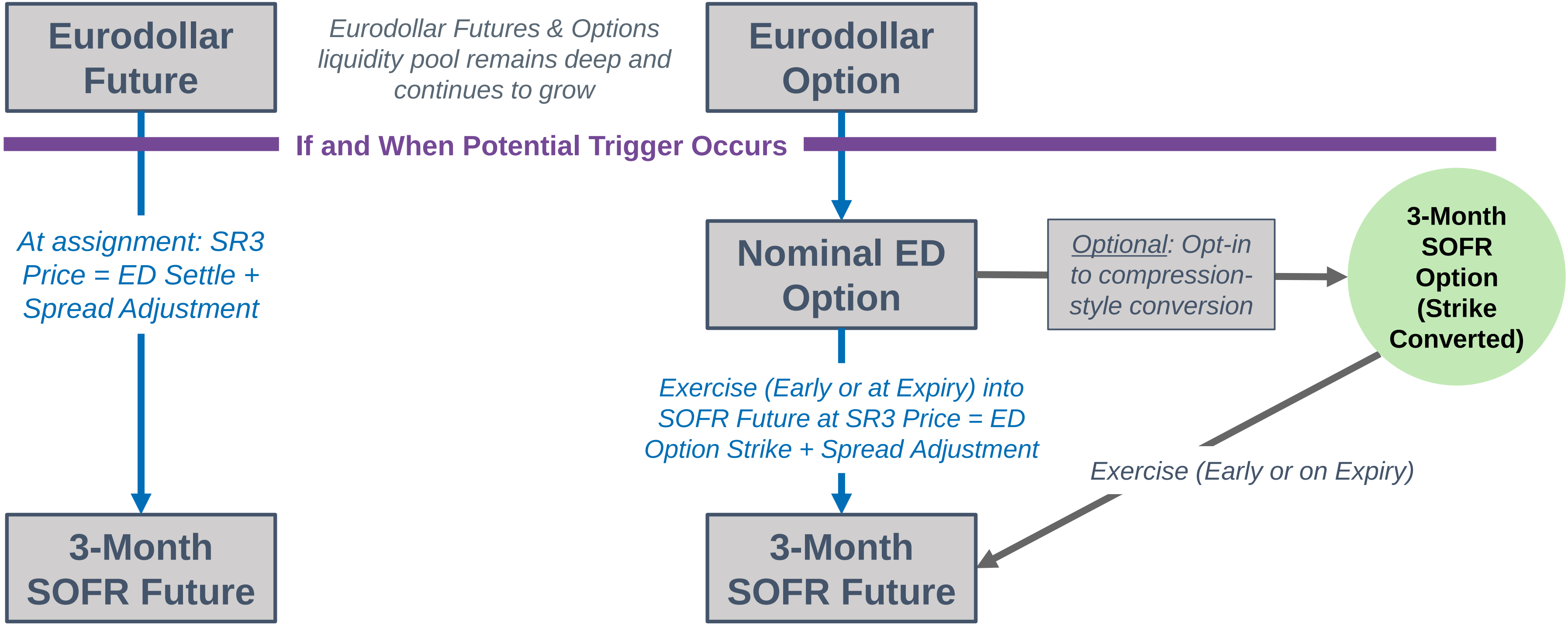
Optional (Opt-In) Conversion of ED Options into Standard Strike SR3 Options

In recognition that the terms to option expiry extend as long as 4 years, and in order to aid in reducing two forms of options (SR3 options and the 'nominal' ED options), we intend to offer opt-in compression-style conversion of 'nominal' ED options, particularly for those with significant remaining time to expiry.

- Such a mechanism would involve converting 'nominal' ED options to corresponding SR3 options, amending the original strike prices in accord with the formula on Slide 6. Because the resultant strike prices would not align with the standard exercise price arrays (integer multiples of 12.5 basis points), positions assigned in conversion would be allocated to the nearest two standard strike prices (one higher, one lower) through interpolation of the assigned option's non-standard strike price, using a standardized option pricing methodology.

- It is envisioned that this opt-in assignment mechanism -- to be validated through separate validation with market participants – would be based on a market-standard option valuation model, with assignments determined on the basis of numerical optimization subject to constraints on, e.g., number of contracts, premium, and/or standard option price gradients ("greeks").

Fallback Flow Chart – Eurodollar Futures & Options



Note 1: "CME Group to Launch SOFR Options on January 6, 2020" - https://www.cmegroup.com/media-room/press-releases/2019/9/04/cme_group_to_launchsofroptionsonjanuary62020.html

Additional Information

Serial Eurodollars

Currently SOFR futures that correspond to the Reference period of Serial Eurodollars are not listed. In order to smoothly transition any open interest in Serial Eurodollars at the time of a potential fallback trigger, CME would add SOFR contracts to match existing ED serials immediately upon the trigger and then use the same fallback method as for quarterly contracts.

OTC Cleared Swaps, and Eris & CME MAC Swap Futures

In the event of a fallback trigger, CME cleared OTC swaps would utilize the replacement rate (daily SOFR compounded setting in arrears for USD) plus a Spread Adjustment aligned with ISDA methodology.

Swap futures offer interest rate swap exposure with the simplicity and safety of a standardized futures contract. Both Eris and CME Market Agreed Coupon (MAC) Swap futures contain reference to USD LIBOR in the interest rate swaps contracts which underpin the products. After a fallback trigger event, Eris and CME MAC Swap futures contracts with open interest would utilize the same replacement rate and Spread Adjustment as the OTC swaps and referenced above.

Next Steps

We are eager to hear your comments and questions.

If you wish to speak with us about LIBOR Fallbacks, please contact us at InterestRate@cmegroup.com.

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