

## SOFR Transition at CME and LCH - Are You Ready?

Rodney Greene, Ph.D. [rodney.greene50@gmail.com](mailto:rodney.greene50@gmail.com)

Last week the CME and LCH exchanges reached a major LIBOR to SOFR transition milestone - they both switched from OIS (Overnight Index Swap) discounting to SOFR (Secured Overnight Financing Rate) discounting for cleared swaps. These institutions clear over \$57T swap notional. Given the materiality and immediacy of the LIBOR to SOFR transition, the question for Model Risk Management groups at banks and insurance firms is "Are you ready to assess the SOFR curve construction model risk?"

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- Model Risk Management groups at Federal Reserve and OCC-regulated entities as well as insurers subject to NAIC ORSA guidance should have benchmark SOFR discount curve construction models. Per the Federal Reserve Model Risk guidance SR11-7, model benchmarking is an essential component of ongoing monitoring and effective challenge.
- The transition from OIS discounting to SOFR discounting will materially impact positions in the Banking and Trading Books.
- RG Risk Consulting has developed a flexible piecewise constant forward rate curve builder for benchmarking production term curves.

The curve construction employs a two-step methodology: a bootstrap followed by a nonlinear optimization that minimizes both the pricing error and departure from a smooth curve. Bootstrapping alone obtains excellent agreement with market quotes for SOFR 3-month futures and SOFR/Effective Federal Funds Rate (EFF) basis swaps. The model can incorporate floors on the fitted forward rates. Given the tiny (325 positions) open interest of SOFR future options, the convexity adjustment employs a historical SOFR volatility estimation rather than a market-implied volatility. The instruments used to construct the OIS curve are the liquid 30-day Federal Fund Futures traded at the CME and the OIS swaps cleared at the CME. On the SOFR side the curve fitter can use SOFR 1-month and 3-month futures (traded on the CME) and the Effective Fed Fund / SOFR basis swaps cleared at the CME. Historical SOFR daily fixings are obtained from the Federal Reserve Bank of New York.

The resulting forward rate curves are shown in Figure 1 below. As expected, the elevated credit risk underlying the OIS curve is reflected in its spread over most of the SOFR curve. The discount rate curves obtained from these forwards are shown in Figure 2. It is apparent the LIBOR to SOFR risk free rate transition will have a material impact on discounting. It is imperative the Model Validation function has an independently developed benchmark to determine if the production curve is fit for business purpose under both normal and stressed market conditions.

RG Risk Consulting can provide the interest rate term curve construction expertise so your model risk and governance groups will stay ahead of the SOFR to LIBOR transition.

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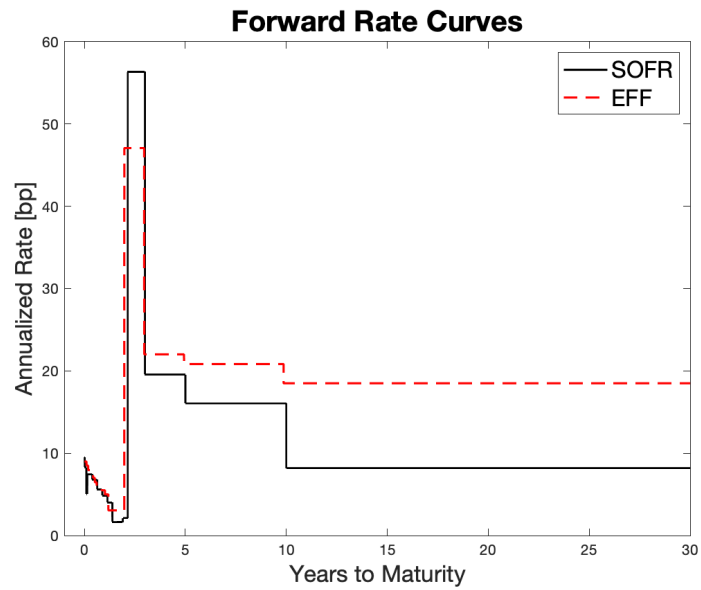


Figure 1: The bootstrapped SOFR (black) and OIS (red) piecewise constant forward rate curves on market date Oct 26, 2020.

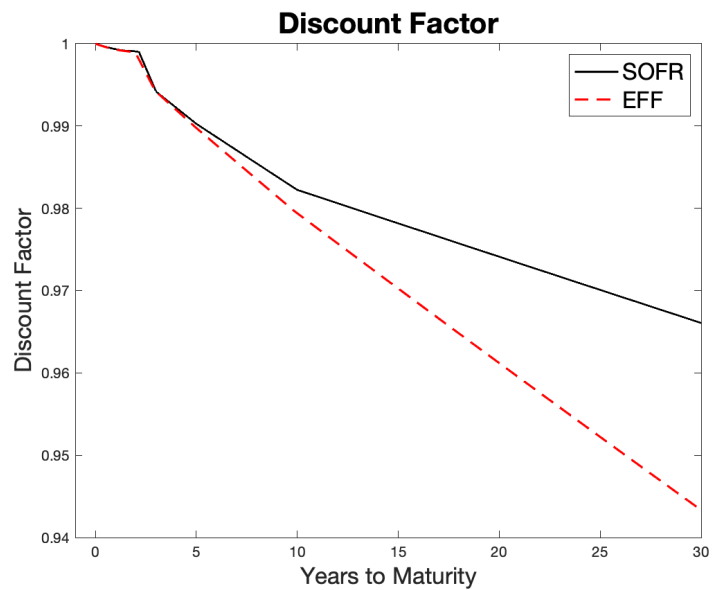


Figure 2: The discount factor curve obtained from the forward rate curve,  $discount(\tau) = e^{-\int_0^\tau f(s)ds}$ , where  $f(\tau)$  is the  $\tau$  – maturity forward rate in Figure 1.