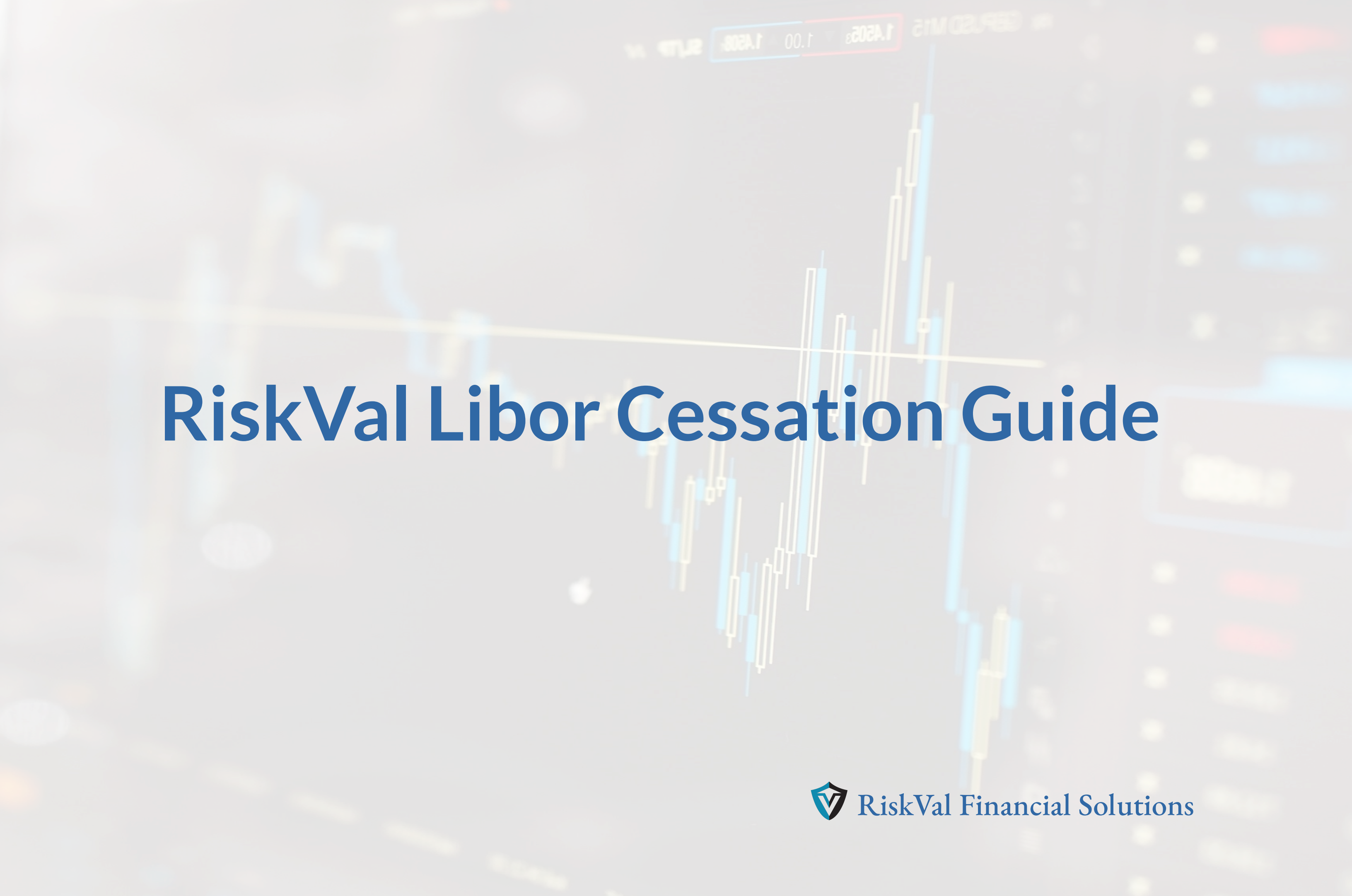


RiskVal Libor Cessation Guide

RiskVal Financial Solutions

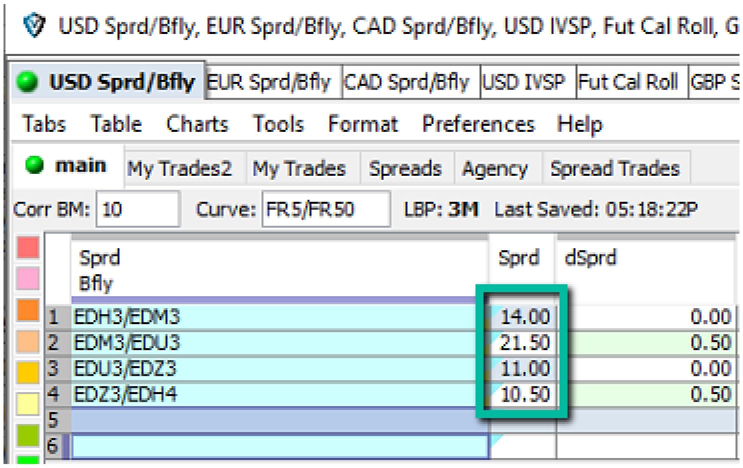
Background

The overnight, 1M, 3M, 6M, and 12M USD LIBOR rates will cease to be published after June 30th, 2023, and as per ISDA's guidance, fixings on LIBOR after this time will fallback to the sum of:

(1) The overnight SOFR compounded over the relevant LIBOR term (set in arrears, as SOFR is a daily overnight rate)
(2) A static spread adjustment equal to the median historical difference between LIBOR and the compounded SOFR over the 5Y period before the trigger event.

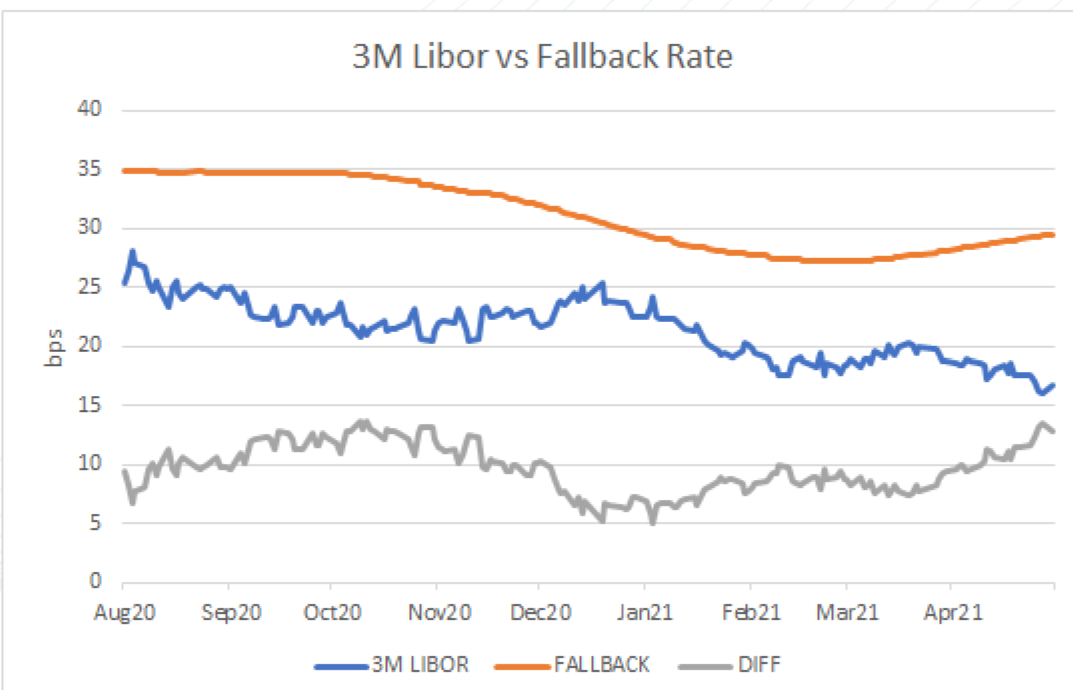
We highlight in this note the numerous ways RiskVal can help traders navigate the complexities of the LIBOR cessation.

Looking at the evidence in EuroDollar Futures Market



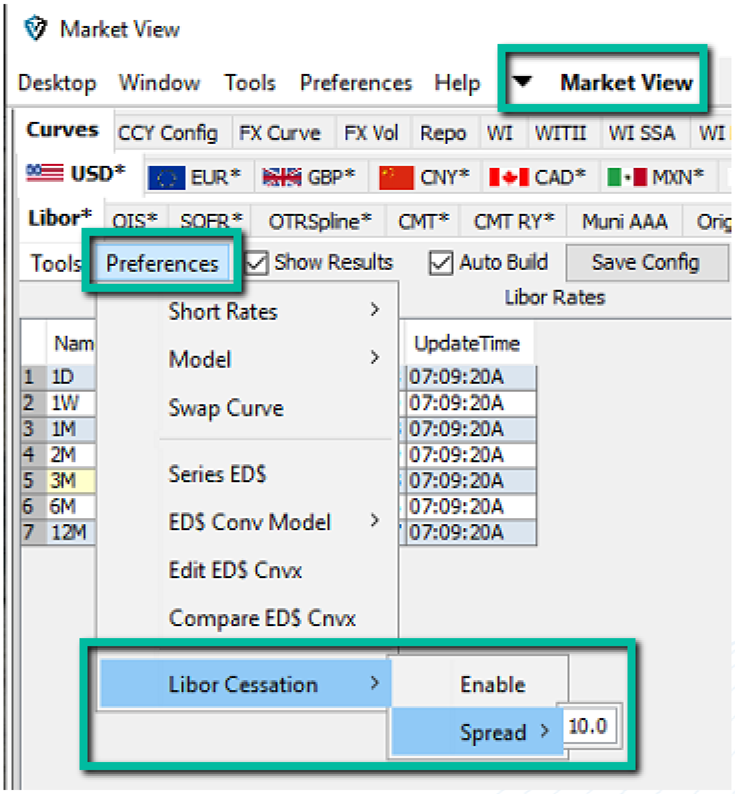
We can see the spread between the EDM3 and EDU3 is about 10 bps higher than the spreads between EDH3 / EDM3, EDU3 / EDZ3 and EDZ3 / EDH4. This is because the market has priced in about a 10bps move at the start of July 2023 between EDM3 and EDU3 when the 3M LIBOR rates will cease to be published.

The 10bps consensus from the market is approximated from the historical difference between LIBOR and the fallback rate.



We can see that the average “DIFF” historically is around 10bps currently.

Enabling the new Libor Curve

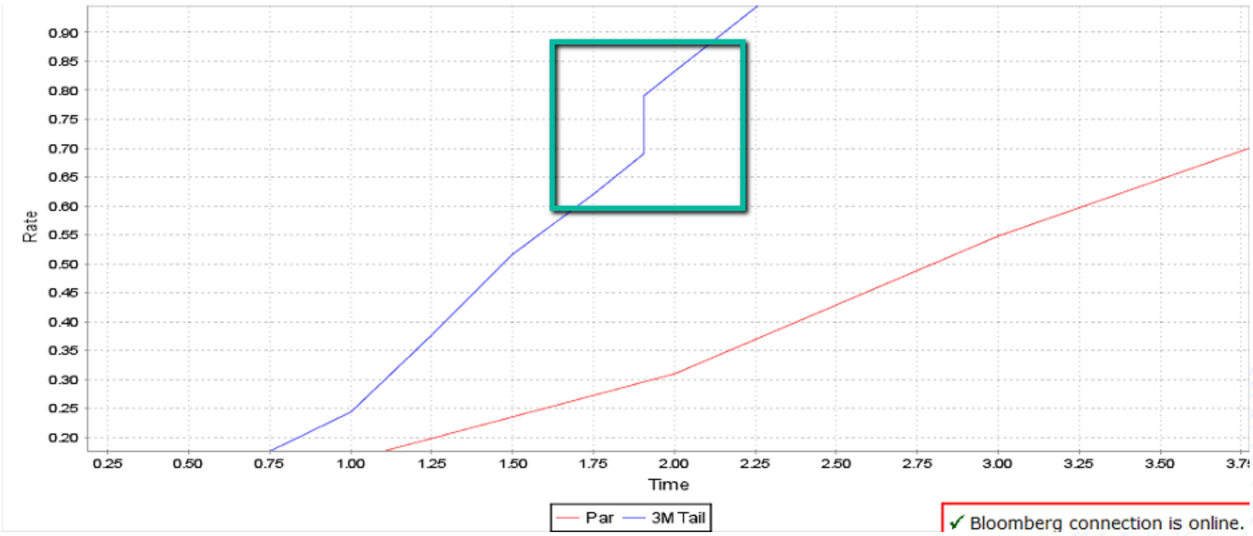


1) In Market View -> Preferences -> Libor Cessation -> Check “Enable”
2) Click “New Build” in the top right and “Save Config”

Once the new curve has been enabled and built, you can also set the bump of the curve on July 1st, 2023. RiskVal’s default is 10bps based on market expectations observed in the EuroDollar market.

Implementation of RiskVal Libor Cessation Adjusted Curve

Though all the liquid and tradable instruments with fixing dates after July 1st 2023 used to fit our Libor curve already price in this 10bps bump, the interpolation between our default fitting points that surround this event (currently 2y and 3y LIBOR swap rate) does not properly reflect the timing of the change due to the Libor cessation event on July 1st 2023. Therefore in our Libor Cessation Adjusted curve, we correctly apply the 10bps bump on July 1st, 2023. The curve prior to 2y and after the 3y swap rate are roughly unchanged, except due to the change in shape of the curve from this 10bps bump.



Seeing the implications in RiskVal

Pricing up a FRA with the old and new curve

This change in the curve build can be seen in pricing two FRAs before and after the Libor cessation date.

FRA 1 - Using the old curve

▼ FRA (2/2) Table Edit Calculation Tools Color Sum(NPV):

	X	IMM	Ccy	MM Notional	Trade Date	Start Date	Maturity Date	Cpn %	Index
1	✓		USD	100.00	10-Aug-2021	03-Jul-2023	03-Oct-2023	0.77975	IB3M
2	✓		USD	100.00	10-Aug-2021	05-Jul-2023	05-Oct-2023	0.77370	IB3M

FRA 2 - Using the new curve with 10bp adjustment

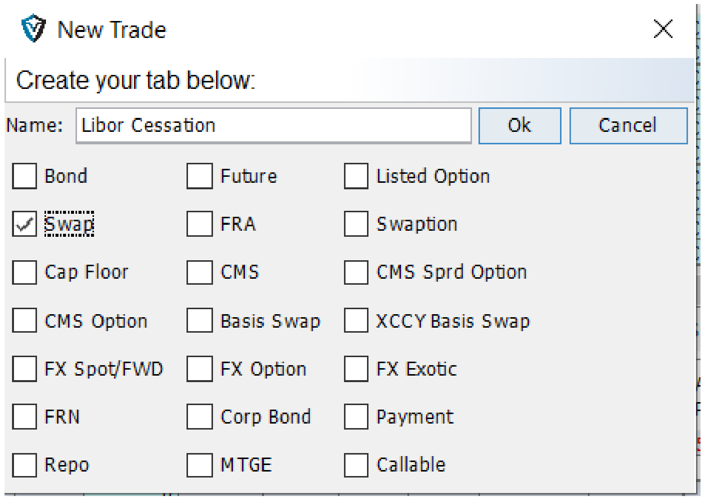
▼ FRA (2/2) Table Edit Calculation Tools Color Sum(NPV):

	X	IMM	Ccy	MM Notional	Trade Date	Start Date	Maturity Date	Cpn %	Index
1	✓		USD	100.00	10-Aug-2021	03-Jul-2023	03-Oct-2023	0.77975	IB3M
2	✓		USD	100.00	10-Aug-2021	05-Jul-2023	05-Oct-2023	0.85073	IB3M
3			USD	0.00	10-Aug-2021	12-Aug-2021	12-Aug-2021	0.00000	LIB3M

You can see that in FRA 2, the second FRA is almost 10 bps higher than in FRA 1 which is using the old curve.

Seeing the PV change of your portfolio due to the Libor Cessation

The Trade Blotter in RiskVal allows you to enter or import your portfolio for pricing and risk analysis.



Once your portfolio is entered, you can price your portfolio with or without enabling the LIBOR Cessation Adjusted curve in Market View and compare the differences.

For example, we can price an old swap using the original curve and the new LIBOR cessation adjusted curve and see the resulting difference in PV.

Original LIBOR Curve:

Swap (1/5) | Table | Edit | Color | Preferences | Cashflow | Refresh | Closing Date: 8/10/2021

	X	Ccy	MM Fixed Notional	Trade Date	Fixed Start	Fixed Mty	Fixed Cpn	NPV	Fixed Pay/Rec	Fixed DC	Fixed Pmt Freq	Float Index
1	✓	USD	100	02-Oct-2020	06-Oct-2021	06-Oct-2031	1.40000%	187,078	REC	30/360	SA	LIB3M
2		USD	100	10-Aug-2021	12-Aug-2021	12-Aug-2031	1.35231%	0	REC	30/360	SA	LIB3M

New LIBOR Cessation Adjusted Curve:

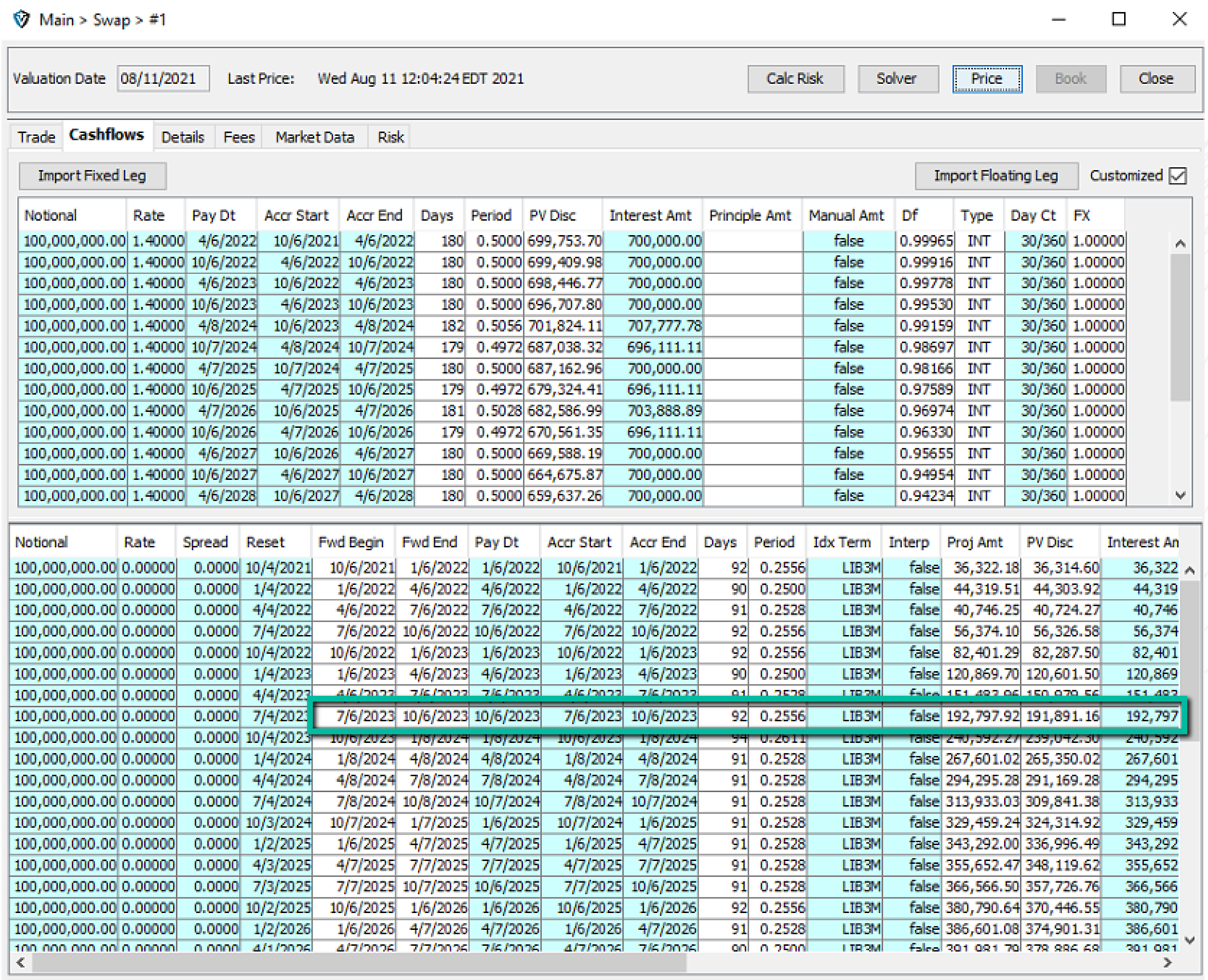
Swap (1/5) | Table | Edit | Color | Preferences | Cashflow | Refresh | Closing Date: 8/10/2021

	X	Ccy	MM Fixed Notional	Trade Date	Fixed Start	Fixed Mty	Fixed Cpn	NPV	Fixed Pay/Rec	Fixed DC	Fixed Pmt Freq	Float Index
1	✓	USD	100	02-Oct-2020	06-Oct-2021	06-Oct-2031	1.40000%	171,238	REC	30/360	SA	LIB3M
2		USD	100	10-Aug-2021	12-Aug-2021	12-Aug-2031	1.35281%	0	REC	30/360	SA	LIB3M

We can see that pricing two identical swaps on the original and the new curve produces different NPVs.

To see more details on the changes in the swap, we can also look at the actual cashflows by double clicking the "B/E Rate Dirty" cell, going to the "Cashflow" tab in the pop-up, and pricing it there. We can see in this example that the cashflow for the 7/4/2023 reset date under the original curve is significantly lower than for the new cashflow from the LIBOR cessation adjusted curve.

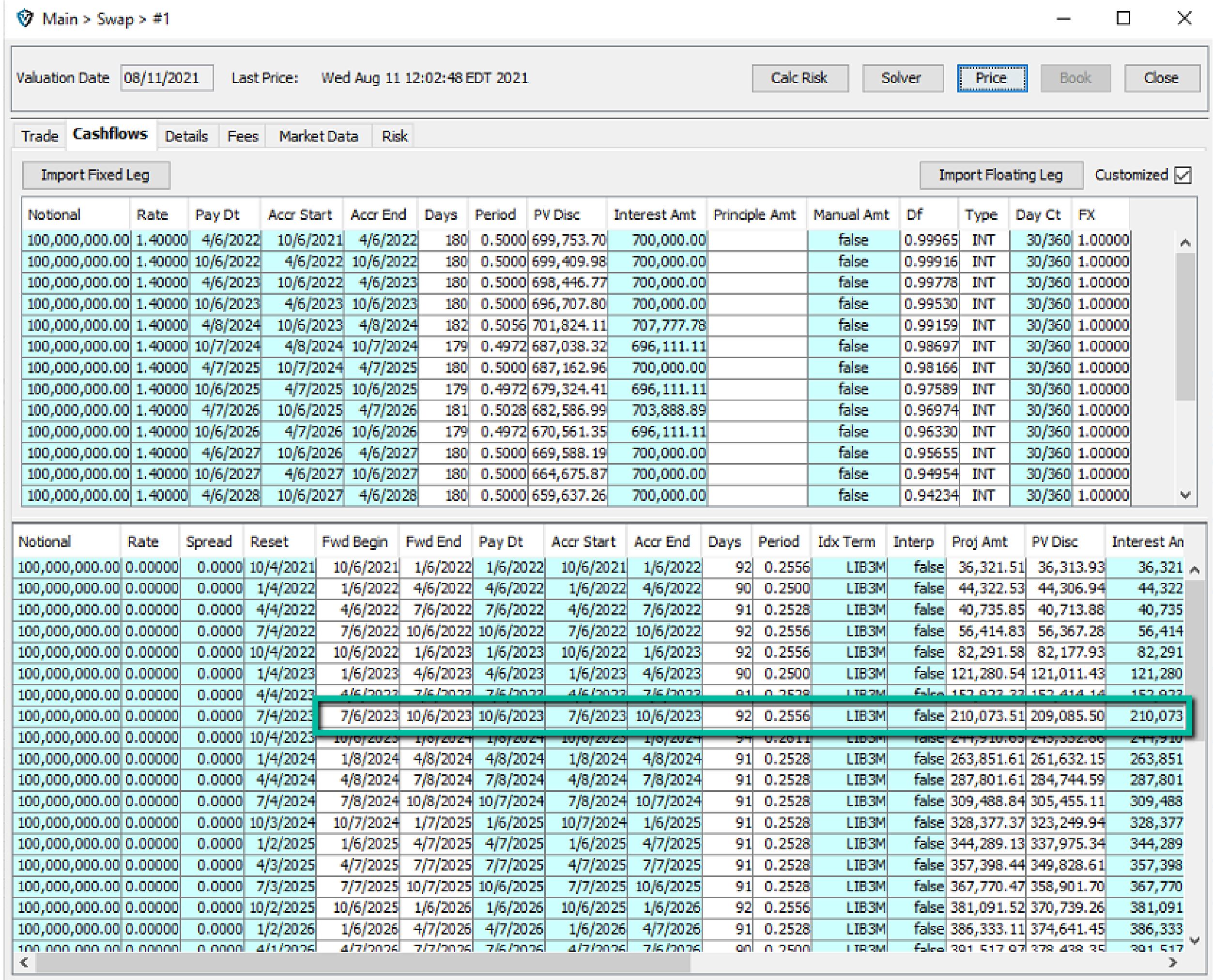
Original Curve:



Notional	Rate	Pay Dt	Accr Start	Accr End	Days	Period	PV Disc	Interest Amt	Principle Amt	Manual Amt	Df	Type	Day Ct	FX
100,000,000.00	1.40000	4/6/2022	10/6/2021	4/6/2022	180	0.5000	699,753.70	700,000.00		false	0.99965	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2022	4/6/2022	10/6/2022	180	0.5000	699,409.98	700,000.00		false	0.99916	INT	30/360	1.00000
100,000,000.00	1.40000	4/6/2023	10/6/2022	4/6/2023	180	0.5000	698,446.77	700,000.00		false	0.99778	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2023	4/6/2023	10/6/2023	180	0.5000	696,707.80	700,000.00		false	0.99530	INT	30/360	1.00000
100,000,000.00	1.40000	4/8/2024	10/6/2023	4/8/2024	182	0.5056	701,824.11	707,777.78		false	0.99159	INT	30/360	1.00000
100,000,000.00	1.40000	10/7/2024	4/8/2024	10/7/2024	179	0.4972	687,038.32	696,111.11		false	0.98697	INT	30/360	1.00000
100,000,000.00	1.40000	4/7/2025	10/7/2024	4/7/2025	180	0.5000	687,162.96	700,000.00		false	0.98166	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2025	4/7/2025	10/6/2025	179	0.4972	679,324.41	696,111.11		false	0.97589	INT	30/360	1.00000
100,000,000.00	1.40000	4/7/2026	10/6/2025	4/7/2026	181	0.5028	682,586.99	703,888.89		false	0.96974	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2026	4/7/2026	10/6/2026	179	0.4972	670,561.35	696,111.11		false	0.96330	INT	30/360	1.00000
100,000,000.00	1.40000	4/6/2027	10/6/2026	4/6/2027	180	0.5000	669,588.19	700,000.00		false	0.95655	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2027	4/6/2027	10/6/2027	180	0.5000	664,675.87	700,000.00		false	0.94954	INT	30/360	1.00000
100,000,000.00	1.40000	4/6/2028	10/6/2027	4/6/2028	180	0.5000	659,637.26	700,000.00		false	0.94234	INT	30/360	1.00000

Notional	Rate	Spread	Reset	Fwd Begin	Fwd End	Pay Dt	Accr Start	Accr End	Days	Period	Idx Term	Interp	Proj Amt	PV Disc	Interest An
100,000,000.00	0.00000	0.0000	10/4/2021	10/6/2021	1/6/2022	1/6/2022	10/6/2021	1/6/2022	92	0.2556	LIB3M	false	36,322.18	36,314.60	36,322
100,000,000.00	0.00000	0.0000	1/4/2022	1/6/2022	4/6/2022	4/6/2022	1/6/2022	4/6/2022	90	0.2500	LIB3M	false	44,319.51	44,303.92	44,319
100,000,000.00	0.00000	0.0000	4/4/2022	4/6/2022	7/6/2022	7/6/2022	4/6/2022	7/6/2022	91	0.2528	LIB3M	false	40,746.25	40,724.27	40,746
100,000,000.00	0.00000	0.0000	7/4/2022	7/6/2022	10/6/2022	10/6/2022	7/6/2022	10/6/2022	92	0.2556	LIB3M	false	56,374.10	56,326.58	56,374
100,000,000.00	0.00000	0.0000	10/4/2022	10/6/2022	1/6/2023	1/6/2023	10/6/2022	1/6/2023	92	0.2556	LIB3M	false	82,401.29	82,287.50	82,401
100,000,000.00	0.00000	0.0000	1/4/2023	1/6/2023	4/6/2023	4/6/2023	1/6/2023	4/6/2023	90	0.2500	LIB3M	false	120,869.70	120,601.50	120,869
100,000,000.00	0.00000	0.0000	4/4/2023	4/6/2023	7/6/2023	7/6/2023	4/6/2023	7/6/2023	91	0.2528	LIB3M	false	151,483.96	150,979.56	151,483
100,000,000.00	0.00000	0.0000	7/4/2023	7/6/2023	10/6/2023	10/6/2023	7/6/2023	10/6/2023	92	0.2556	LIB3M	false	192,797.92	191,891.16	192,797
100,000,000.00	0.00000	0.0000	10/4/2023	10/6/2023	1/8/2024	1/8/2024	10/6/2023	1/8/2024	94	0.2611	LIB3M	false	240,592.27	239,042.30	240,592
100,000,000.00	0.00000	0.0000	1/4/2024	1/8/2024	4/8/2024	4/8/2024	1/8/2024	4/8/2024	91	0.2528	LIB3M	false	267,601.02	265,350.02	267,601
100,000,000.00	0.00000	0.0000	4/4/2024	4/8/2024	7/8/2024	7/8/2024	4/8/2024	7/8/2024	91	0.2528	LIB3M	false	294,295.28	291,169.28	294,295
100,000,000.00	0.00000	0.0000	7/4/2024	7/8/2024	10/8/2024	10/7/2024	7/8/2024	10/7/2024	91	0.2528	LIB3M	false	313,933.03	309,841.38	313,933
100,000,000.00	0.00000	0.0000	10/3/2024	10/7/2024	1/7/2025	1/6/2025	10/7/2024	1/6/2025	91	0.2528	LIB3M	false	329,459.24	324,314.92	329,459
100,000,000.00	0.00000	0.0000	1/2/2025	1/6/2025	4/7/2025	4/7/2025	1/6/2025	4/7/2025	91	0.2528	LIB3M	false	343,292.00	336,996.49	343,292
100,000,000.00	0.00000	0.0000	4/3/2025	4/7/2025	7/7/2025	7/7/2025	4/7/2025	7/7/2025	91	0.2528	LIB3M	false	355,652.47	348,119.62	355,652
100,000,000.00	0.00000	0.0000	7/3/2025	7/7/2025	10/7/2025	10/6/2025	7/7/2025	10/6/2025	91	0.2528	LIB3M	false	366,566.50	357,726.76	366,566
100,000,000.00	0.00000	0.0000	10/2/2025	10/6/2025	1/6/2026	1/6/2026	10/6/2025	1/6/2026	92	0.2556	LIB3M	false	380,790.64	370,446.55	380,790
100,000,000.00	0.00000	0.0000	1/2/2026	1/6/2026	4/7/2026	4/7/2026	1/6/2026	4/7/2026	91	0.2528	LIB3M	false	386,601.08	374,901.31	386,601
100,000,000.00	0.00000	0.0000	4/1/2026	4/7/2026	7/7/2026	7/6/2026	4/7/2026	7/6/2026	90	0.2500	LIB3M	false	391,981.79	378,886.68	391,981

New Curve:



Notional	Rate	Pay Dt	Accr Start	Accr End	Days	Period	PV Disc	Interest Amt	Principle Amt	Manual Amt	Df	Type	Day Ct	FX
100,000,000.00	1.40000	4/6/2022	10/6/2021	4/6/2022	180	0.5000	699,753.70	700,000.00		false	0.99965	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2022	4/6/2022	10/6/2022	180	0.5000	699,409.98	700,000.00		false	0.99916	INT	30/360	1.00000
100,000,000.00	1.40000	4/6/2023	10/6/2022	4/6/2023	180	0.5000	698,446.77	700,000.00		false	0.99778	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2023	4/6/2023	10/6/2023	180	0.5000	696,707.80	700,000.00		false	0.99530	INT	30/360	1.00000
100,000,000.00	1.40000	4/8/2024	10/6/2023	4/8/2024	182	0.5056	701,824.11	707,777.78		false	0.99159	INT	30/360	1.00000
100,000,000.00	1.40000	10/7/2024	4/8/2024	10/7/2024	179	0.4972	687,038.32	696,111.11		false	0.98697	INT	30/360	1.00000
100,000,000.00	1.40000	4/7/2025	10/7/2024	4/7/2025	180	0.5000	687,162.96	700,000.00		false	0.98166	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2025	4/7/2025	10/6/2025	179	0.4972	679,324.41	696,111.11		false	0.97589	INT	30/360	1.00000
100,000,000.00	1.40000	4/7/2026	10/6/2025	4/7/2026	181	0.5028	682,586.99	703,888.89		false	0.96974	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2026	4/7/2026	10/6/2026	179	0.4972	670,561.35	696,111.11		false	0.96330	INT	30/360	1.00000
100,000,000.00	1.40000	4/6/2027	10/6/2026	4/6/2027	180	0.5000	669,588.19	700,000.00		false	0.95655	INT	30/360	1.00000
100,000,000.00	1.40000	10/6/2027	4/6/2027	10/6/2027	180	0.5000	664,675.87	700,000.00		false	0.94954	INT	30/360	1.00000
100,000,000.00	1.40000	4/6/2028	10/6/2027	4/6/2028	180	0.5000	659,637.26	700,000.00		false	0.94234	INT	30/360	1.00000

Notional	Rate	Spread	Reset	Fwd Begin	Fwd End	Pay Dt	Accr Start	Accr End	Days	Period	Idx Term	Interp	Proj Amt	PV Disc	Interest An
100,000,000.00	0.00000	0.0000	10/4/2021	10/6/2021	1/6/2022	1/6/2022	10/6/2021	1/6/2022	92	0.2556	LIB3M	false	36,321.51	36,313.93	36,321
100,000,000.00	0.00000	0.0000	1/4/2022	1/6/2022	4/6/2022	4/6/2022	1/6/2022	4/6/2022	90	0.2500	LIB3M	false	44,322.53	44,306.94	44,322
100,000,000.00	0.00000	0.0000	4/4/2022	4/6/2022	7/6/2022	7/6/2022	4/6/2022	7/6/2022	91	0.2528	LIB3M	false	40,735.85	40,713.88	40,735
100,000,000.00	0.00000	0.0000	7/4/2022	7/6/2022	10/6/2022	10/6/2022	7/6/2022	10/6/2022	92	0.2556	LIB3M	false	56,414.83	56,367.28	56,414
100,000,000.00	0.00000	0.0000	10/4/2022	10/6/2022	1/6/2023	1/6/2023	10/6/2022	1/6/2023	92	0.2556	LIB3M	false	82,291.58	82,177.93	82,291
100,000,000.00	0.00000	0.0000	1/4/2023	1/6/2023	4/6/2023	4/6/2023	1/6/2023	4/6/2023	90	0.2500	LIB3M	false	121,280.54	121,011.43	121,280
100,000,000.00	0.00000	0.0000	4/4/2023	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
100,000,000.00	0.00000	0.0000	7/4/2023	7/6/2023	10/6/2023	10/6/2023	7/6/2023	10/6/2023	92	0.2556	LIB3M	false	210,073.51	209,085.50	210,073
100,000,000.00	0.00000	0.0000	10/4/2023	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
100,000,000.00	0.00000	0.0000	1/4/2024	1/8/2024	4/8/2024	4/8/2024	1/8/2024	4/8/2024	91	0.2528	LIB3M	false	263,851.61	261,632.15	263,851
100,000,000.00	0.00000	0.0000	4/4/2024	4/8/2024	7/8/2024	7/8/2024	4/8/2024	7/8/2024	91	0.2528	LIB3M	false	287,801.61	284,744.59	287,801
100,000,000.00	0.00000	0.0000	7/4/2024	7/8/2024	10/8/2024	10/7/2024	7/8/2024	10/7/2024	91	0.2528	LIB3M	false	309,488.84	305,455.11	309,488
100,000,000.00	0.00000	0.0000	10/3/2024	10/7/2024	1/7/2025	1/6/2025	10/7/2024	1/6/2025	91	0.2528	LIB3M	false	328,377.37	323,249.94	328,377
100,000,000.00	0.00000	0.0000	1/2/2025	1/6/2025	4/7/2025	4/7/2025	1/6/2025	4/7/2025	91	0.2528	LIB3M	false	344,289.13	337,975.34	344,289
100,000,000.00	0.00000	0.0000	4/3/2025	4/7/2025	7/7/2025	7/7/2025	4/7/2025	7/7/2025	91	0.2528	LIB3M	false	357,398.44	349,828.61	357,398
100,000,000.00	0.00000	0.0000	7/3/2025	7/7/2025	10/7/2025	10/6/2025	7/7/2025	10/6/2025	91	0.2528	LIB3M	false	367,770.47	358,901.70	367,770
100,000,000.00	0.00000	0.0000	10/2/2025	10/6/2025	1/6/2026	1/6/2026	10/6/2025	1/6/2026	92	0.2556	LIB3M	false	381,091.52	370,739.26	381,091
100,000,000.00	0.00000	0.0000	1/2/2026	1/6/2026	4/7/2026	4/7/2026	1/6/2026	4/7/2026	91	0.2528	LIB3M	false	386,333.11	374,641.45	386,333
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

For more details or any thoughts and comments, our team is available 24/5 and can be reached via any of the following channels:

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- +1 212 631 0808
- IB Chat ***Jordan Hu***