

INTEREST RATE BENCHMARKS REVIEW: Second Quarter of 2019 and First Half of 2019

The ISDA Interest Rate Benchmarks Review analyzes the trading volumes of interest rate derivatives (IRD) transactions in the US referencing the Secured Overnight Financing Rate (SOFR) and other selected alternative risk-free rates (RFRs), including the Sterling Overnight Index Average (SONIA), the Swiss Average Rate Overnight (SARON) and the Tokyo Overnight Average Rate (TONA). ISDA expects to add the Euro Short-Term Rate (€STR) to its analysis once it is published and traded. In addition, the report analyzes IRD traded notional referencing the London Interbank Offered Rate (LIBOR) denominated in US dollars, sterling, Swiss franc, yen, euro, as well as EURIBOR and TIBOR.

This report uses data from the Depository Trust & Clearing Corporation (DTCC) swap data repository (SDR). It therefore only covers trades that are required to be disclosed under US regulations.

KEY HIGHLIGHTS FOR THE SECOND QUARTER OF 2019 AND FIRST HALF OF 2019

In the second quarter of 2019, IRD traded notional referencing SOFR jumped more than two and a half times to \$84.7 billion compared with \$22.6 billion in the first quarter of 2019. The number of SOFR transactions increased to 188 from 69 over the same period. While growing, IRD traded notional referencing SOFR remained small at about 0.1% of total IRD traded notional.

SOFR swaps accounted for 4.7% of IRD traded notional referencing alternative RFRs (which include SOFR, SONIA, SARON and TONA), while SONIA swaps represented 93.7%¹. Transactions referencing alternative RFRs remained a small percentage of total IRD traded notional, accounting for less than 3%.

Beyond over-the-counter (OTC) swaps, trading in SOFR exchange-traded futures also increased in the second quarter of 2019. Traded volume in SOFR futures totaled \$4.7 trillion compared with \$4.3 trillion in the first quarter of 2019. Open interest in SOFR futures jumped to \$558.0 billion at the end of June 2019 from \$468.4 billion at the end of March 2019². Traded volume in SONIA futures totaled \$2 trillion compared with \$2.3 trillion in the first quarter of 2019. Open interest increased from \$144.1 billion at the end of March 2019 to \$158.8 billion at the end of June 2019.

¹ This is also expected, as the effective federal funds rate (EFFR) is still widely used as the reference rate for US dollar overnight index swaps (OIS), and SOFR was not published until the second quarter of 2018. In contrast, SONIA is used as the reference rate for sterling OIS

² The analysis of trading activity in SOFR and SONIA exchange-traded futures is based on data from CME, ICE and LCH

In the second quarter of 2019:

IRD traded notional referencing alternative RFRs, including SOFR, SONIA, SARON and TONA, totaled \$1.8 trillion and represented 2.7% of total IRD traded notional, almost unchanged from the first quarter of 2019. The number of trades referencing alternative RFRs was 2,934 (compared with 3,088 in the first quarter of 2019), accounting for 0.8% of total IRD trade count.

- SOFR traded notional increased by 274.8% compared with the first quarter of 2019 and totaled \$84.7 billion, including \$18.1 billion of basis swaps. Trade count jumped by 172.5% over the same period and totaled 188, including 53 basis swaps³.
- SONIA traded notional declined by 0.6% to \$1.7 trillion, including \$34.2 billion of basis swaps. Trade count decreased by 7.8% and totaled 2,656, including 271 basis swaps⁴.
- SARON traded notional and trade count grew by 150% and 37.5% to \$2.8 billion and 11, respectively.
- TONA traded notional and trade count decreased by 33.6% and 39.2% to \$27.9 billion and 79, respectively.

IRD traded notional referencing IBORs totaled \$41.7 trillion and represented 61.2% of total IRD traded notional in the second quarter of 2019. \$32.4 trillion of IRD traded notional was based on US dollar LIBOR, accounting for 47.5% of the total. IRD traded notional referencing the effective federal funds rate (EFFR) totaled \$10.6 trillion and accounted for 15.6% of IRD traded notional.

³ See the note below regarding why basis swaps are tracked separately for the alternative RFRs

⁴ Please note this analysis is based on data from a US SDR (DTCC) and only covers trades that are required to be disclosed under US regulations. It therefore does not reflect global trading volumes

In the first half of 2019:

IRD traded notional referencing alternative RFRs totaled \$3.6 trillion and accounted for 2.6% of total IRD traded notional. The number of trades referencing RFRs was 6,021, which accounted for 0.8% of total IRD trade count.

- SOFR traded notional totaled \$107.3 billion, including \$21.1 billion of basis swaps. Trade count totaled 257, including 76 basis swaps.
- SONIA traded notional was \$3.4 trillion, including \$75.2 billion of basis swaps. Trade count totaled 5,536, including 571 basis swaps.
- SARON traded notional and trade count was \$3.9 billion and 19, respectively.
- TONA traded notional totaled \$69.9 billion, including \$1.0 billion of basis swaps. Trade count totaled 209, including one basis swap.

IRD traded notional referencing IBORs totaled \$88.3 trillion and represented 64.0% of total IRD traded notional. \$67.1 trillion of IRD traded notional was based on US dollar LIBOR, accounting for 48.6% of the total. IRD traded notional referencing the EFRR totaled \$17.6 trillion and accounted for 12.8% of IRD traded notional.

Table 1: Interest Rate Benchmarks Traded Notional and Trade Count⁵

	Q2 2019		YTD Q2 2019	
	Traded Notional (US\$ billions)	Trade Count	Traded Notional (US\$ billions)	Trade Count
USD LIBOR	32,351.0	177,357	67,115.3	348,687
SOFR	66.6	135	86.3	181
Basis Swaps: SOFR	18.1	53	21.1	76
GBP LIBOR	2,373.9	20,753	5,817.4	45,324
SONIA	1,669.0	2,385	3,341.5	4,965
Basis Swaps: SONIA	34.2	271	75.2	571
CHF LIBOR	143.4	2,013	331.3	4,475
SARON	2.8	11	3.9	19
Basis Swaps: SARON	0.0	0	0.0	0
JPY LIBOR	1,072.2	10,326	2,309.4	21,543
TIBOR/Euroyen TIBOR	5.1	34	6.0	55
TONA	27.9	79	68.9	208
Basis Swaps: TONA	0.0	0	1.0	1
EUR LIBOR	0.0	2	0.0	3
EURIBOR	5,708.1	45,280	12,743.6	95,375
€STR	0.0	0	0.0	0
Other*	24,588.2	110,880	46,084.1	225,600
Total**	68,060.6	369,579	138,005.0	747,083

*Other includes IRD with other reference rates and IBOR/non-RFR basis swaps
**This data includes only the transactions required to be disclosed under US regulations and does not include any exchange-traded derivatives (futures)

Source: DTCC SDR

The alternative RFR basis swap data covers all basis swaps with the relevant alternative RFR as one of the underlying assets. This includes alternative RFR/IBOR basis swaps. The IBOR data does not cover any basis swaps. The 'Other' category covers non-alternative RFR/IBOR basis swaps and IRD with reference rates that are not otherwise covered.

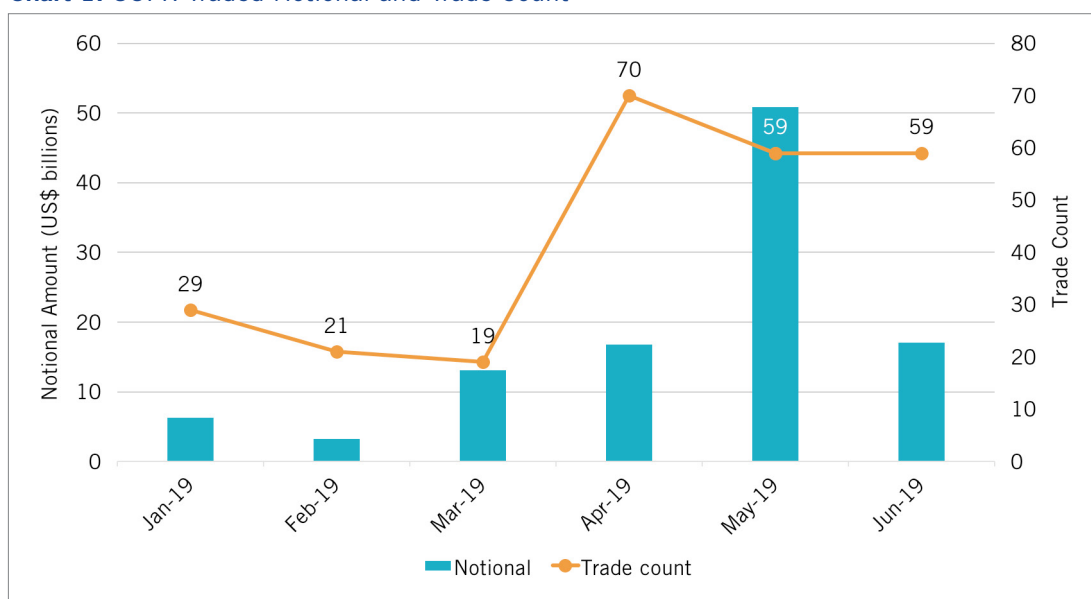
Basis swaps with the relevant alternative RFR as one of the underlying assets are tracked separately because market participants have specifically identified a robust basis swaps market as key to understanding the economic differences between the alternative RFRs and other rates, including IBORs. A robust and liquid basis swaps market for the alternative RFRs will also support hedging during the transition from IBORs to the alternative RFRs.

⁵ €STR will be added once it is published and traded. The European Central Bank has indicated it will start publishing the €STR as of October 2, 2019

SOFR

SOFR swaps started trading in the third quarter of 2018 and trading activity picked up in the second quarter of 2019. IRD traded notional referencing SOFR jumped by 274.8% to \$84.7 billion compared with \$22.6 billion in the first quarter of 2019. The number of SOFR transactions increased by 172.5% to 188 from 69 over the same period.

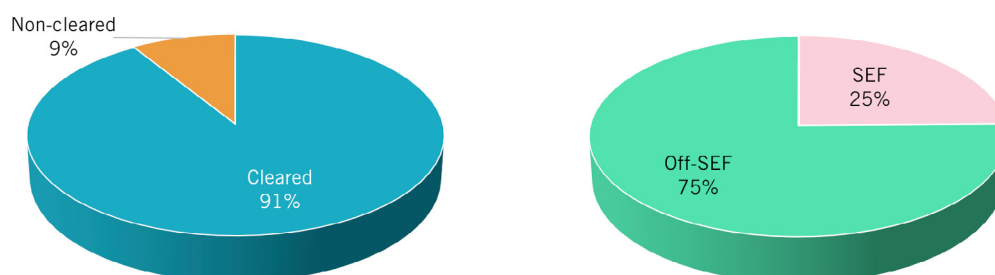
Chart 1: SOFR Traded Notional and Trade Count



Source: DTCC SDR

In the second quarter of 2019, \$77.1 billion of SOFR swaps was cleared, including \$60.1 billion of OIS and \$17.0 billion of basis swaps. Cleared swaps accounted for 91% of total SOFR traded notional. Forty-one out of 188 transactions were traded on swap execution facilities (SEFs). SEF-traded notional totaled \$21.0 billion and represented 25% of total SOFR traded notional.

Chart 2: SOFR Traded Notional Q2 2019



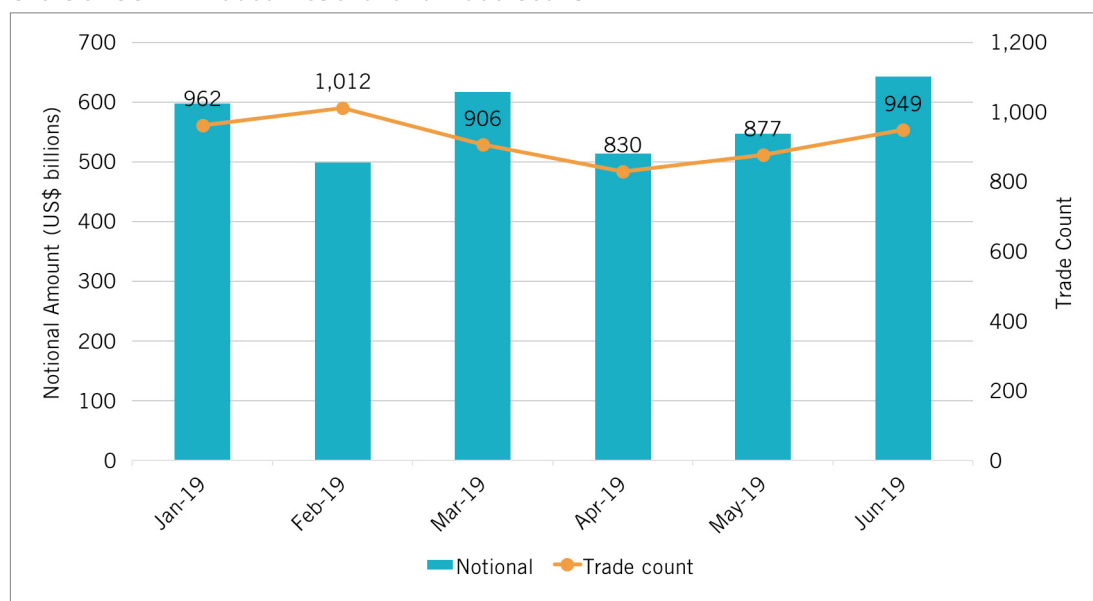
Source: DTCC SDR

SOFR traded notional was \$107.3 billion in the first half of 2019, including \$21.1 billion of basis swaps. Total trade count was 257, including 76 basis swaps. Cleared notional totaled \$89.4 billion and accounted for 83% of total traded notional. SEF-traded notional totaled \$22.6 billion and represented 21% of total traded notional.

SONIA

SONIA traded notional declined by 0.6% in the second quarter of 2019 to \$1.7 trillion, including \$34.2 billion of basis swaps. Trade count decreased by 7.8% and totaled 2,656, including 271 basis swaps.

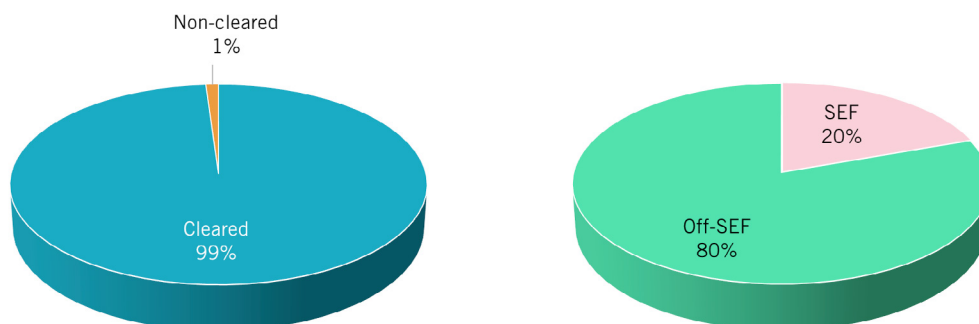
Chart 3: SONIA Traded Notional and Trade Count



Source: DTCC SDR

In the second quarter of 2019, \$1.7 trillion of SONIA swaps was cleared, including \$27.3 billion of basis swaps. Cleared transactions accounted for 99% of total SONIA traded notional. SEF-traded notional totaled \$333.6 billion and represented 20% of total SONIA traded notional.

Chart 4: SONIA Traded Notional Q2 2019



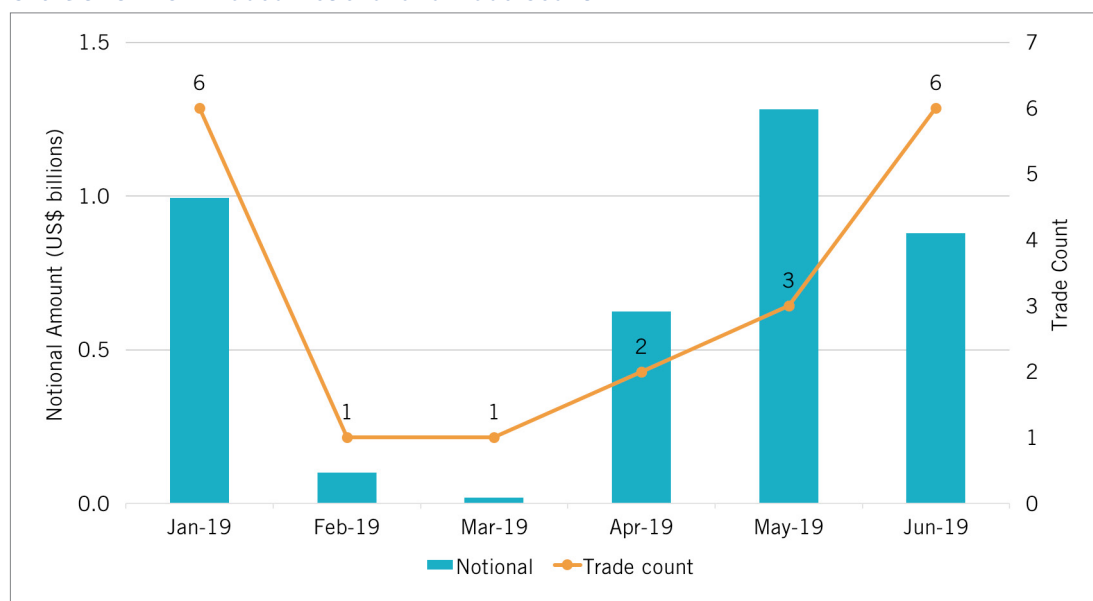
Source: DTCC SDR

In the first half of 2019, SONIA traded notional was \$3.4 trillion, including \$75.2 billion of basis swaps. Total trade count was 5,536, including 571 basis swaps. Cleared notional totaled \$3.4 trillion and accounted for 99% of total traded notional. SEF-traded notional totaled \$562.3 billion and represented 16% of total traded notional.

SARON

There were 11 SARON trades in the second quarter of 2019, with total traded notional of \$2.8 billion. SARON traded notional and trade count increased by 150% and 37.5%, respectively, compared with the first quarter of 2019.

Chart 5: SARON Traded Notional and Trade Count



Source: DTCC SDR

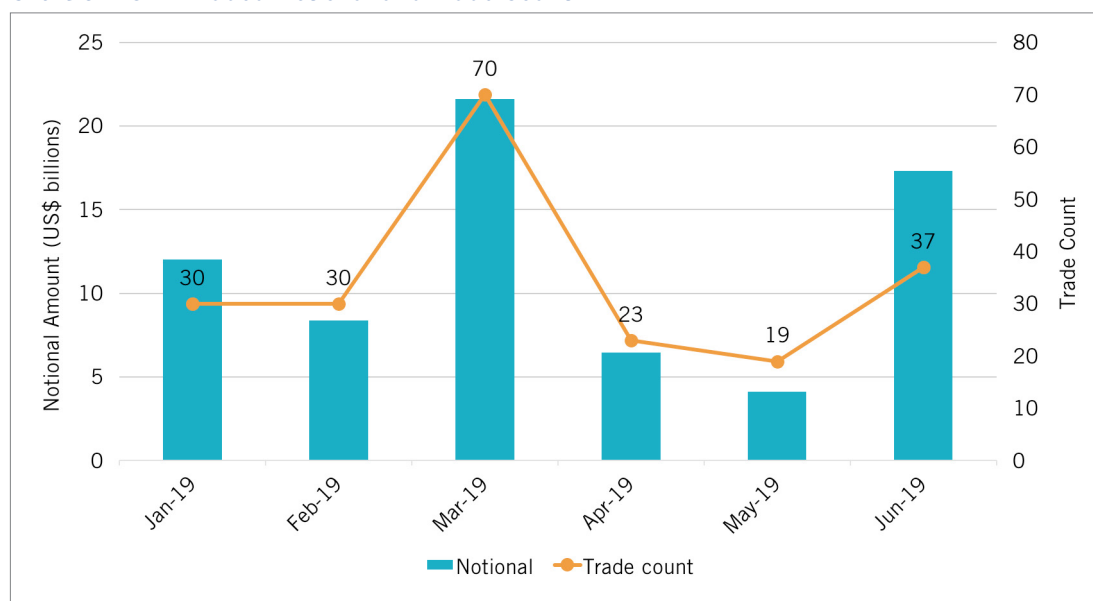
Cleared notional totaled \$2.8 billion and accounted for 100% of total traded notional. SEF-traded notional totaled \$2.3 billion and represented 84% of total traded notional.

In the first half of 2019, SARON traded notional was \$3.9 billion and trade count totaled 19. Cleared notional was \$3.9 billion, accounting for 100% of total traded notional. SEF-traded notional totaled \$2.6 billion and represented 66% of total traded notional.

TONA

There were 79 TONA trades in the second quarter of 2019, with total traded notional of \$27.9 billion. TONA traded notional and trade count declined by 33.6% and 39.2%, respectively, compared with the first quarter of 2019.

Chart 6: TONA Traded Notional and Trade Count



Source: DTCC SDR

In the second quarter of 2019, \$26.5 billion of TONA swaps was cleared, which accounted for 95% of total SONIA traded notional. SEF-traded notional reached \$16.0 billion and represented 57% of total TONA traded notional.

In the first half of 2019, TONA traded notional was \$69.9 billion, including \$1.0 billion of basis swaps. Total trade count was 209, including one basis swap. Cleared notional totaled \$66.7 billion and accounted for 95% of total traded notional. SEF-traded notional equaled \$31.8 billion and represented 45% of total TONA traded notional.

Table 2: Interest Rate Benchmarks Traded Notional and Trade Count Quarterly Change

	Q2 2019		Q1 2019		Q2 2019 vs. Q1 2019	
	Traded Notional (US\$ billions)	Trade Count	Traded Notional (US\$ billions)	Trade Count	Traded Notional	Trade Count
USD LIBOR	32,351.0	177,357	34,772.4	171,350	-7.0%	3.5%
SOFR	84.7	188	22.6	69	274.8%	172.5%
GBP LIBOR	2,373.9	20,753	3,442.8	24,566	-31.0%	-15.5%
SONIA	1,703.2	2,656.0	1,713.5	2,881	-0.6%	-7.8%
CHF LIBOR	143.4	2,013	187.9	2,462	-23.7%	-18.2%
SARON	2.8	11	1.1	8	150.0%	37.5%
JPY LIBOR	1,072.2	10,326	1,237.3	11,219	-13.3%	-8.0%
TIBOR/Euroyen TIBOR	5.1	34	0.9	21	455.6%	61.9%
TONA	27.9	79	42.0	130	-33.6%	-39.2%
EUR LIBOR	0.0	2	0.0	1	-30.8%	100.0%
EURIBOR	5,708.1	45,280	7,030.0	50,087	-18.8%	-9.6%
€STR	0.0	0	0.0	0		
Other*	24,588.2	110,880	21,486.2	114,435	14.4%	-3.1%
Total	68,060.6	369,579	69,936.9	377,229	-2.7%	-2.0%

*Other includes IRD with other reference rates and IBOR/non-RFR basis swaps

**This data includes only the transactions required to be disclosed under US regulations and does not include any exchange-traded derivatives (futures)

Source: DTCC SDR

Table 3: Interest Rate Benchmarks Cleared and Non-Cleared Notional

	Q2 2019		YTD Q2 2019	
	Cleared Notional (US\$ billions)	Non-cleared Notional (US\$ billions)	Cleared Notional (US\$ billions)	Non-cleared Notional (US\$ billions)
USD LIBOR	29,016.6	3,334.4	60,620.8	6,494.5
SOFR	60.1	6.5	70.0	16.3
Basis Swaps: SOFR	17.0	1.1	19.4	1.7
GBP LIBOR	2,166.5	207.4	5,308.6	508.7
SONIA	1,657.5	11.5	3,302.0	39.5
Basis Swaps: SONIA	27.3	6.9	64.4	10.8
CHF LIBOR	142.9	0.6	330.6	0.7
SARON	2.79	0.00	3.9	0.0
Basis Swaps: SARON	0.00	0.00	0.0	0.0
JPY LIBOR	995.6	76.6	2,157.1	152.3
TIBOR/Euroyen TIBOR	1.2	3.9	1.9	4.1
TONA	26.5	1.4	66.7	2.2
Basis Swaps: TONA	0.0	0.0	0.0	1.0
EUR LIBOR	0.0	0.0	0.0	0.0
EURIBOR	4,978.9	729.2	11,108.8	1,634.8
€STR	0.0	0.0	0.0	0.0
Other*	21,424.5	3,163.6	39,620.8	6,463.3
Total	60,517.4	7,543.2	122,675.1	15,329.9
*Other includes IRD with other reference rates and IBOR/non-RFR basis swaps				
**This data includes only the transactions required to be disclosed under US regulations and does not include any exchange-traded derivatives (futures)				

Source: DTCC SDR

Table 4: Interest Rate Benchmarks SEF and Off-SEF Traded Notional

	Q2 2019		YTD Q2 2019	
	SEF Traded Notional (US\$ billions)	Off-SEF Traded Notional (US\$ billions)	SEF Traded Notional (US\$ billions)	Off-SEF Traded Notional (US\$ billions)
USD LIBOR	24,560.4	7,790.6	51,752.7	15,362.6
SOFR	13.1	53.5	13.1	73.2
Basis Swaps: SOFR	7.9	10.2	9.5	11.6
GBP LIBOR	1,262.9	1,111.1	3,330.8	2,486.6
SONIA	330.5	1,338.5	553.3	2,788.2
Basis Swaps: SONIA	3.1	31.1	9.0	66.2
CHF LIBOR	68.9	74.6	156.7	174.6
SARON	2.3	0.45	2.6	1.3
Basis Swaps: SARON	0.0	0.00	0.0	0.0
JPY LIBOR	714.0	358.3	1,608.1	701.2
TIBOR/Euroyen TIBOR	0.0	5.1	0.0	6.0
TONA	16.0	11.9	31.8	37.1
Basis Swaps: TONA	0.0	0.0	0.0	1.0
EUR LIBOR	0.0	0.0	0.0	0.0
EURIBOR	2,753.4	2,954.8	6,113.2	6,630.3
€STR	0.0	0.0	0.0	0.0
Other*	9,428.3	15,159.9	17,546.2	28,537.9
Total	39,160.7	28,899.9	81,127.1	56,877.8
*Other includes IRD with other reference rates and IBOR/non-RFR basis swaps				
**This data includes only the transactions required to be disclosed under US regulations and does not include any exchange-traded derivatives (futures)				

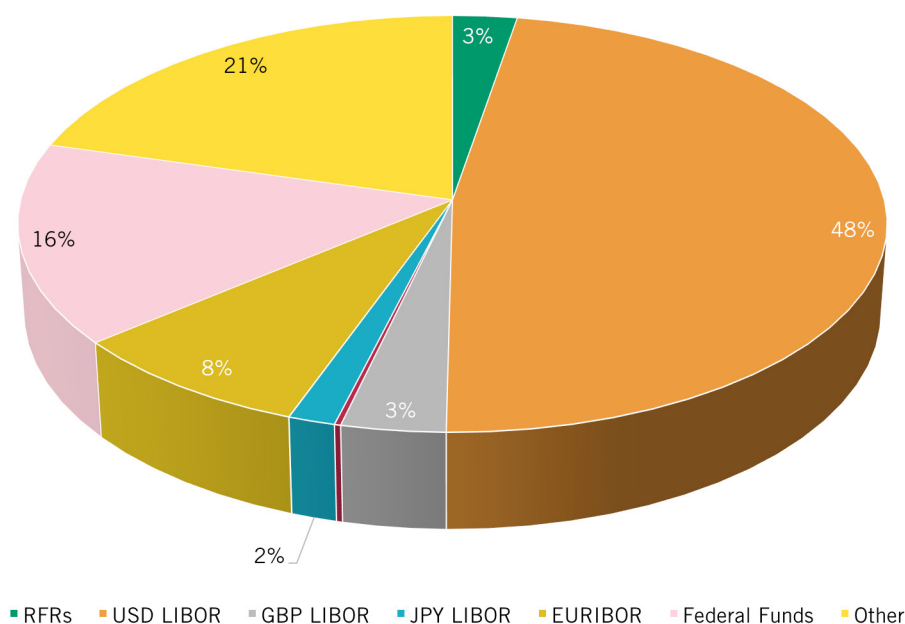
Source: DTCC SDR

IBORs

IRD traded notional referencing LIBOR denominated in US dollar, sterling, Swiss franc, yen, euro, as well as EURIBOR and TIBOR, totaled \$41.7 trillion and represented 61.2% of overall IRD traded notional in the second quarter of 2019. The number of trades referencing IBORs equaled 255,765, accounting for 69.2% of total IRD trade count.

\$32.4 trillion of IRD traded notional was based on US dollar LIBOR, accounting for 47.5% of total IRD traded notional in the second quarter of 2019. EURIBOR and sterling LIBOR traded notional was \$5.7 trillion and \$2.4 trillion, respectively. IRD traded notional referencing the EFRR totaled \$10.6 trillion and accounted for 15.6% of IRD traded notional.

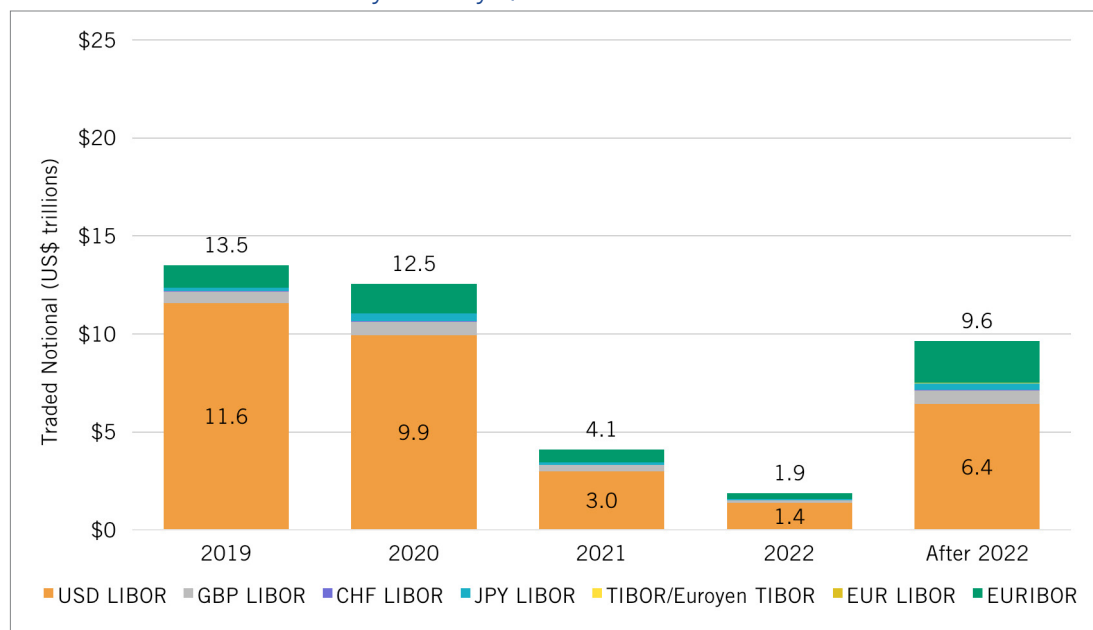
Chart 7: IRD Traded Notional Q2 2019



Source: DTCC SDR

In the second quarter of 2019, \$13.5 trillion of IRD traded notional referencing LIBOR had a 2019 maturity, including \$11.6 trillion of traded notional based on US dollar LIBOR, \$1.1 trillion based on EURIBOR and \$0.6 trillion based on sterling LIBOR. \$12.5 trillion of traded notional had a 2020 maturity. Traded notional maturing in 2021 and 2022 totaled \$4.1 trillion and \$1.9 trillion, respectively, while \$9.6 trillion of traded notional had a maturity after 2022.

Chart 8: IRD Traded Notional by Maturity Q2 2019



Source: DTCC SDR

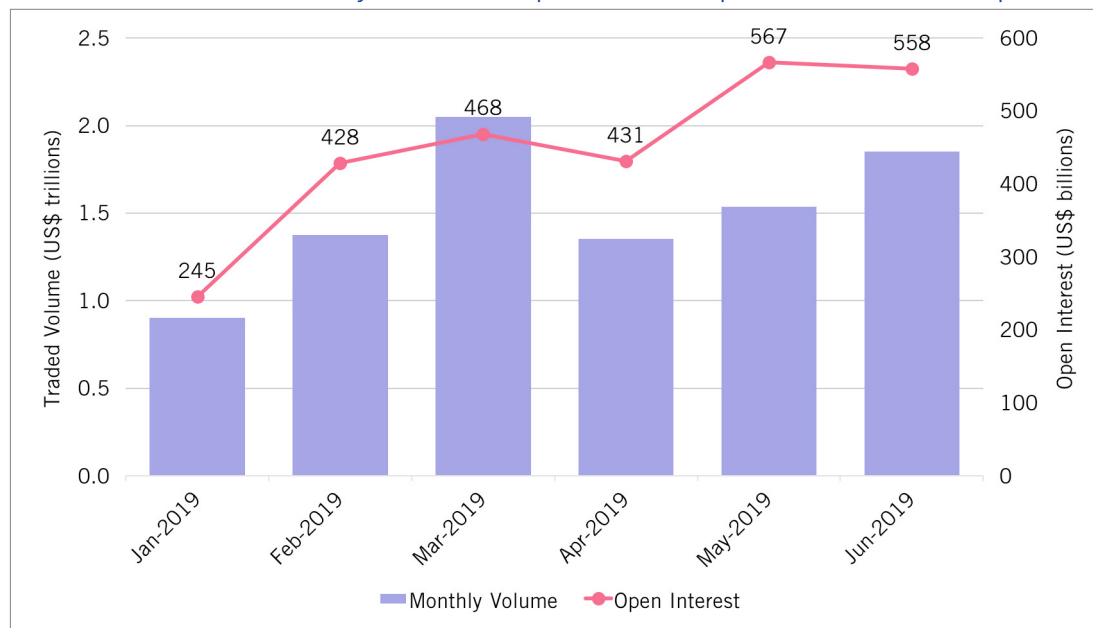
Traded notional of IRD referencing IBORs reached \$88.3 trillion and represented 64.0% of total IRD traded notional in the first half of 2019. The number of trades referencing IBORs equaled 515,462, accounting for 69.0% of total IRD trade count. \$67.1 trillion of IRD traded notional was based on US dollar LIBOR, accounting for 48.6% of total IRD traded notional. EURIBOR and sterling LIBOR traded notional was \$12.7 trillion and \$5.8 trillion, respectively. IRD traded notional referencing the EFRF totaled \$17.6 trillion and accounted for 12.8% of IRD traded notional.

In the first half of 2019, \$35.6 trillion of IRD traded notional referencing LIBOR had a 2019 maturity, including \$30.3 trillion of traded notional based on US dollar LIBOR, \$2.7 trillion based on EURIBOR and \$1.9 trillion based on sterling LIBOR. \$21.0 trillion of traded notional had a 2020 maturity. Traded notional maturing in 2021 and 2022 totaled \$7.9 trillion and \$3.8 trillion, respectively, while \$19.9 trillion of traded notional had a maturity after 2022.

SOFR and SONIA Futures

Trade volume in SOFR futures reached \$4.7 trillion in the second quarter of 2019 compared with \$4.3 trillion in the first quarter of 2019. Open interest in SOFR futures jumped to \$558.0 billion at the end of June 2019 from \$468.4 billion at the end of March 2019⁶.

Chart 9: SOFR Futures Monthly Volume and Open Interest (Implied Notional in OTC Equivalent)



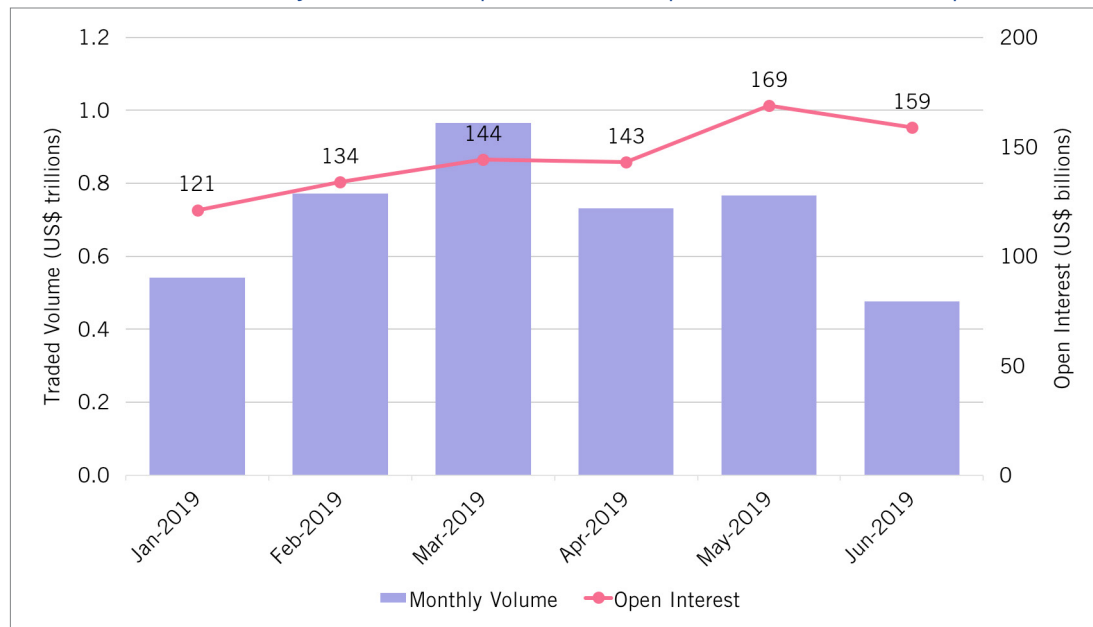
Source: CME and ICE

Traded volume in SONIA futures totaled \$2 trillion in the second quarter of 2019 compared with \$2.3 trillion in the previous quarter. Open interest increased from \$144.1 billion at the end of March 2019 to \$158.8 billion at the end of June 2019⁷.

⁶ The analysis of trading activity in SOFR and SONIA exchange-traded futures is based on data from CME, ICE and LCH

⁷ All numbers are converted to US dollar based on the exchange rates at the end of each month: www.x-rates.com/historical

Chart 10: SONIA Monthly Volume and Open Interest (Implied Notional in OTC Equivalent)



Source: CME, ICE and LCH

Total traded volume in SOFR futures reached \$9.1 trillion in the first half of 2019, while traded volume in SONIA futures was \$4.3 trillion.

Table 5: SOFR and SONIA Futures Volume and Open Interest (Implied Notional in OTC Equivalent)

	Q2 2019		YTD Q2 2019	
	Traded Volume (US\$ billions)	Open Interest (US\$ billions)	Traded Volume (US\$ billions)	Open Interest (US\$ billions)
SOFR Futures	4743.0	558.0	9069.6	558.0
SONIA Futures	1974.1	158.8	4252.0	158.8

Source: CME, ICE and LCH



ISDA has published other recent research papers:

- ***SwapsInfo First Half of 2019 and Second Quarter of 2019 Review Summary, July 2019***

<https://www.isda.org/a/8EWME/SwapsInfo-1H-and-Q2-of-2019-Review-Summary.pdf>

- ***Key Trends in the Size and Composition of OTC Derivatives Markets, May 2019***

<https://www.isda.org/a/9atME/Key-Trends-in-Size-and-Composition-of-OTC-Derivatives-Markets.pdf>

- ***Interest Rate Benchmarks Review: First Quarter of 2019, April 2019***

<https://www.isda.org/a/nAnME/Interest-Rates-Benchmarks-Review-Q1-2019.pdf>

<https://www.isda.org/2019/01/29/interest-rate-benchmarks-review-full-year-2018-and-the-fourth-quarter-of-2018/>

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