

TRANSITION TO RFRs REVIEW: Full Year 2021 and the Fourth Quarter of 2021

The Transition to Risk-free Rates (RFRs) Review analyzes the trading volumes of over-the-counter (OTC) and exchange-traded interest rate derivatives (IRD) that reference selected alternative RFRs, including the Secured Overnight Financing Rate (SOFR), the Sterling Overnight Index Average (SONIA), the Swiss Average Rate Overnight (SARON), the Tokyo Overnight Average Rate (TONA), the Euro Short-Term Rate (€STR) and the Australian Overnight Index Average (AONIA).

Global data is collected from all major central counterparties (CCPs) that clear OTC and exchange-traded derivatives (ETD) in six currencies, including the Australian Securities Exchange, CME Group, Eurex, Intercontinental Exchange (ICE), Japan Securities Clearing Corporation, LCH and the Tokyo Financial Exchange. Only cleared transactions are captured in this data.

US data is collected 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 and includes cleared and non-cleared OTC IRD transactions.

KEY HIGHLIGHTS FOR THE FULL YEAR 2021 AND THE FOURTH QUARTER OF 2021

Global Trading Activity¹

The ISDA-Clarus RFR Adoption Indicator tracks how much global trading activity (as measured by DVO1) is conducted in cleared OTC and exchange-traded IRD that reference the identified RFRs in six major currencies².

In the full year 2021:

The ISDA-Clarus RFR Adoption Indicator increased to a monthly average of 16.4% in 2021 compared to 7.5% in 2020.

RFR-linked IRD traded notional accounted for 13.6% of total IRD traded notional in 2021 compared to 8.8% in 2020.

In the fourth quarter of 2021:

The ISDA-Clarus RFR Adoption Indicator rose to a monthly average of 27.1% compared to 17.4% in the prior quarter³.

RFR-linked IRD traded notional represented 18.2% of total IRD traded notional versus 13.9% in the third quarter of 2021.

Trading Activity in the US⁴

In the full year 2021:

US-reported traded notional of OTC IRD referencing alternative RFRs increased by 82.8% to \$34.1 trillion in 2021 compared to \$18.7 trillion in 2020. RFR transactions accounted for 14.7% of total IRD traded notional compared to 8.1% in 2020.

¹ The global data is collected from major central counterparties (CCPs) that clear over-the-counter (OTC) and exchange-traded derivatives (ETD) in six currencies, including the Australian Securities Exchange, CME Group, Eurex, Intercontinental Exchange (ICE), Japan Securities Clearing Corporation, LCH and the Tokyo Financial Exchange. Only cleared transactions are captured in this data

² ISDA-Clarus RFR Adoption Indicator White Paper: www.isda.org/a/SlmTE/ISDA-Clarus-RFR-Adoption-Indicator-Whitepaper.pdf

³ The RFR Adoption Indicator was 31.7% in December 2021. ISDA-Clarus RFR Adoption Indicator, December 2021 www.isda.org/a/OP6gE/ISDA-Clarus-RFR-Adoption-Indicator-December-2021.pdf

⁴ US data is collected 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 and includes cleared and non-cleared OTC IRD transactions

- IRD traded notional referencing SOFR increased to \$9.4 trillion in 2021 from \$1.3 trillion in 2020. The rise was primarily driven by the SOFR First initiative that started for linear derivatives on July 26, 2021^{5,6}. SOFR transactions accounted for 7.4% of US dollar-denominated IRD traded notional compared to 1.0% in 2020.
- SONIA-linked IRD traded notional increased by 21.1% to \$20.5 trillion in 2021 compared to \$17.0 trillion in 2020. SONIA transactions comprised 65.9% of sterling-denominated IRD traded notional compared to 54.0% in 2020⁷.
- Traded notional of IRD referencing LIBOR denominated in US dollars, sterling, Swiss franc, yen and euro, as well as EURIBOR and TIBOR, remained relatively flat at \$144.4 trillion in 2021 compared to 2020. These interbank offered rates (IBORs) represented 62.3% of total IRD traded notional in 2021 compared to 62.8% in 2020.

In the fourth quarter of 2021:

Traded notional of OTC IRD referencing alternative RFRs increased to \$17.5 trillion in the fourth quarter of 2021 compared to \$7.5 trillion in the third quarter of 2021. RFR transactions accounted for 28.7% of total IRD traded notional compared to 15.0% in the third quarter of 2021.

- SOFR-linked IRD traded notional increased to \$5.5 trillion in the fourth quarter of 2021 from \$2.1 trillion in the third quarter of 2021. SOFR transactions accounted for 17.1% of US dollar-denominated IRD traded notional compared to 8.2% in the third quarter of 2021.
- IRD traded notional referencing SONIA increased by 74.3% to \$8.5 trillion in the fourth quarter of 2021 versus \$4.9 trillion in the third quarter of 2021. SONIA transactions represented 89.7% of sterling-denominated IRD traded notional compared to 72.5% in the third quarter of 2021.

⁵ SOFR First is a phased initiative for switching interdealer trading conventions from LIBOR to SOFR for US dollar linear interest rate swaps, cross-currency swaps, non-linear derivatives and exchange-traded derivatives. Having started with interdealer linear interest rate swaps on July 26, 2021, SOFR First was extended to cross-currency swaps on September 21, 2021 and non-linear derivatives on November 8, 2021 www.cftc.gov/PressRoom/PressReleases/8409-21

⁶ Instead of setting a date for exchange-traded derivatives, the Interest Rate Benchmark Reform Subcommittee of the Commodity Futures Trading Commission's (CFTC) Market Risk Advisory Committee (MRAC) issued a User Guide for Exchange Traded Derivatives Transactions that encourages all market participants to ensure operational capability to transact SOFR exchange-traded derivatives as soon as possible. It also notes it would be best practice for all market participants to replace use of LIBOR with SOFR for new contracts, including exchange-traded derivatives, after the end of 2021 www.cftc.gov/PressRoom/PressReleases/8469-21

⁷ This is expected as SONIA has been and is currently used as the reference rate for sterling overnight index swaps (OIS), while the effective federal funds rate (EFFR) is still widely used as the reference rate for US dollar OIS

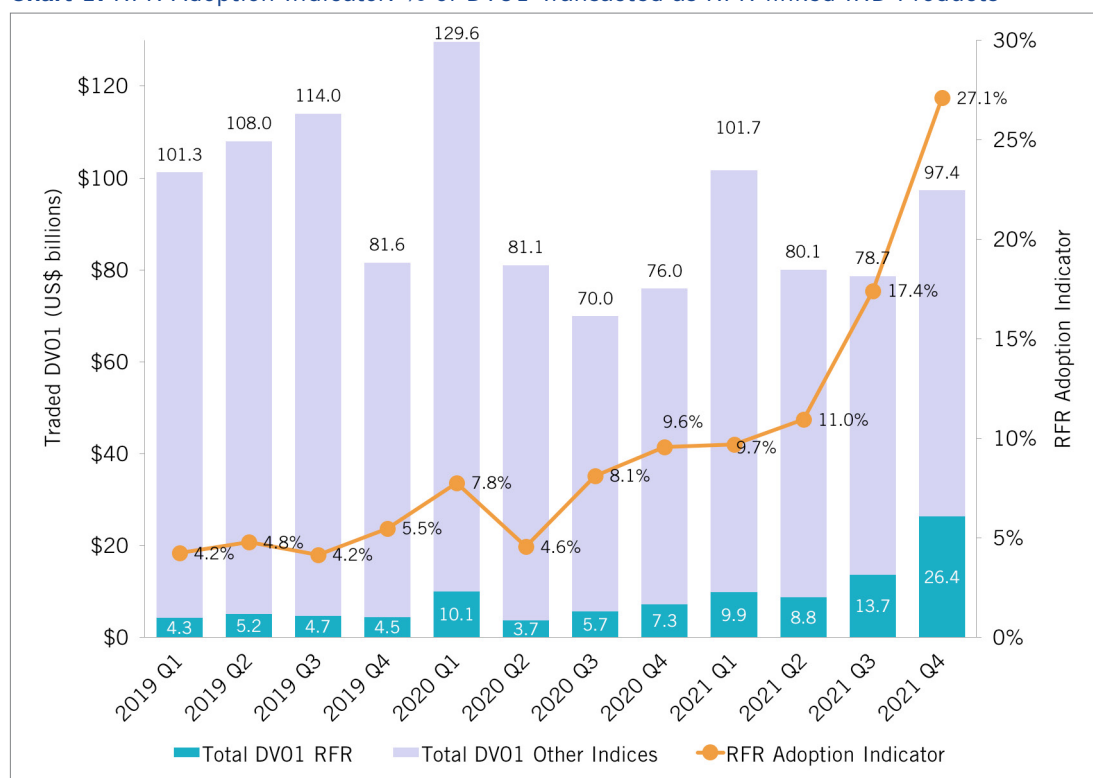
- Traded notional of IRD referencing LIBOR denominated in US dollars, sterling, Swiss franc, yen and euro, as well as EURIBOR and TIBOR, decreased by 4.0% to \$28.5 trillion in the fourth quarter of 2021 compared to \$29.7 trillion in the third quarter of 2021. These IBORs comprised 46.8% of total IRD traded notional in the fourth quarter of 2021 compared to 59.8% in the third quarter of 2021.
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GLOBAL RFR-LINKED OTC AND EXCHANGE-TRADED IRD

In 2021, the ISDA-Clarus RFR Adoption Indicator rose to a monthly average of 16.4% versus 7.5% in 2020⁸. RFR-linked IRD DV01 increased to \$58.7 billion in 2021 compared to \$26.7 billion in 2020. Total IRD DV01 increased to \$357.9 billion from \$356.6 billion over the same period⁹ (see Chart 1).

The ISDA-Clarus RFR Adoption Indicator increased to a monthly average of 27.1% in the fourth quarter of 2021 compared to 17.4% in the third quarter of 2021. RFR-linked IRD DV01 totaled \$26.4 billion in the fourth quarter of 2021 versus \$13.7 billion in the prior quarter. Total IRD DV01 climbed to \$97.4 billion from \$78.7 billion over the same period.

Chart 1: RFR Adoption Indicator: % of DV01 Transacted as RFR-linked IRD Products



Source: ISDA-Clarus RFR Adoption Indicator

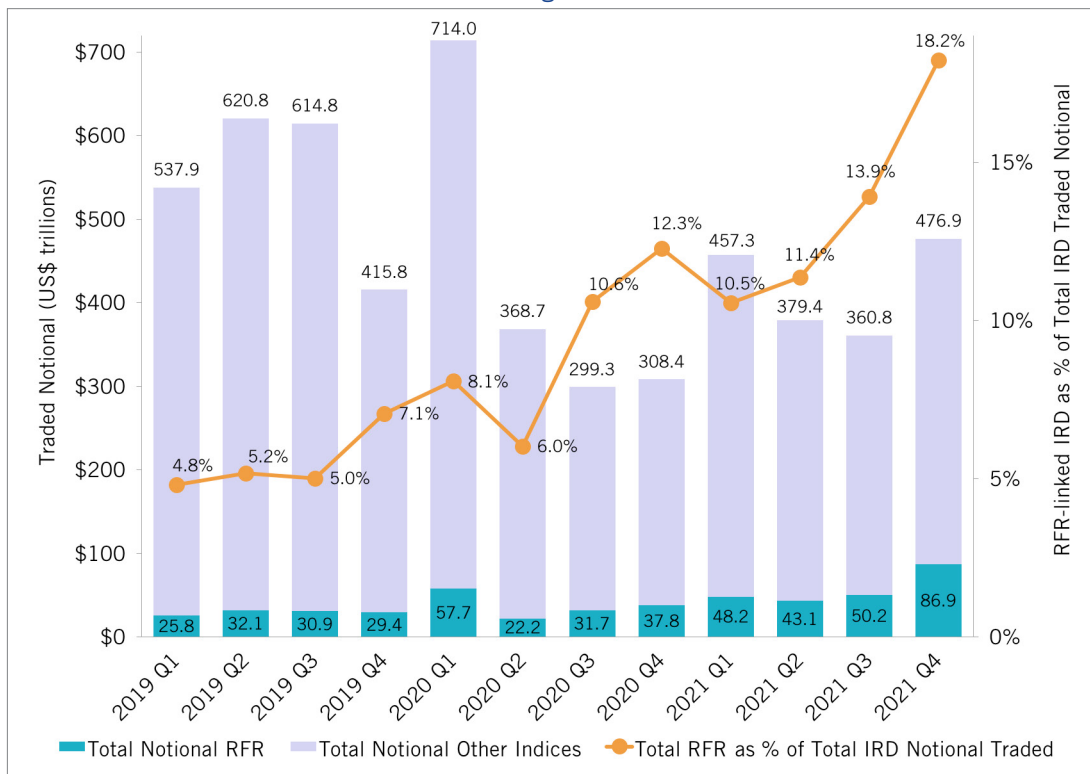
RFR-linked IRD traded notional accounted for 13.6% of total IRD traded notional in 2021 versus 8.8% in 2020. IRD traded notional referencing RFRs increased to \$228.4 trillion in 2021 from \$149.5 trillion in the prior year. Total IRD traded notional decreased to \$1,674.5 trillion from \$1,690.4 trillion over the same period (see Chart 2).

⁸ The ISDA-Clarus RFR Adoption Indicator tracks how much global trading activity (as measured by DV01) is conducted in cleared OTC and exchange-traded derivatives that reference the identified RFRs in six major currencies, including the Australian dollar, euro, sterling, Swiss franc, US dollar and yen

⁹ To access interactive charts and download monthly data, go to <https://rfr.clarusft.com>

RFR-linked IRD traded notional rose to 18.2% of total IRD traded notional in the fourth quarter of 2021 versus 13.9% in the third quarter of 2021. IRD traded notional linked to RFRs totaled \$86.9 trillion in the fourth quarter of 2021 compared to \$50.2 trillion in the third quarter of 2021. Total IRD traded notional increased to \$476.9 trillion from \$360.8 trillion over the same period.

Chart 2: Global IRD Traded Notional (including OTC and ETD)



Source: ISDA-Clarus RFR Adoption Indicator

RFR-LINKED OTC IRD IN THE US

US-reported OTC IRD traded notional referencing alternative RFRs increased by 82.8% to \$34.1 trillion in 2021 compared to \$18.7 trillion in 2020¹⁰. RFR transactions accounted for 14.7% of total IRD traded notional in 2021, up from 8.1% the year before.

In the full year 2021:

- SOFR-linked OTC IRD traded notional increased by 601.3% compared with 2020 and totaled \$9.4 trillion, including \$2.7 trillion of basis swaps. Trade count increased from 9.1 thousand to 86.9 thousand, including 15.9 thousand basis swaps¹¹.
- SONIA-linked IRD traded notional grew by 21.1% to \$20.5 trillion, including \$350.1 billion of basis swaps. Trade count increased by 282.5% to 98.7 thousand, including 2.6 thousand basis swaps¹².
- SARON-linked IRD traded notional rose to \$246.1 billion, including \$17.7 billion of basis swaps. Trade count grew to 4.6 thousand, including 167 basis swaps.
- TONA-linked IRD traded notional climbed to \$994.9 billion, including \$194.1 billion of basis swaps. Trade count rose to 11.9 thousand, including 1.9 thousand basis swaps.
- €STR-linked IRD traded notional increased to \$3.0 trillion, including \$290.2 billion of basis swaps. Trade count grew to 11.0 thousand, including 2.0 thousand basis swaps.

¹⁰ This data covers only transactions that are required to be disclosed under US regulations

¹¹ The RFR basis swap data covers all basis swaps with the relevant alternative RFR as one of the underlying assets. This includes alternative RFR/interbank offered rate (IBOR) basis swaps. 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 alternative RFRs

¹² The difference between the rate of increase of SONIA-linked traded notional and trade count was due to a smaller transaction size

In the fourth quarter of 2021:

- SOFR-linked OTC IRD traded notional rose by 161.4% versus the third quarter of 2021 and totaled \$5.5 trillion, including \$1.4 trillion of basis swaps. Trade count increased by 169.3% to 54.7 thousand, including 8.8 thousand basis swaps.
- SONIA-linked IRD traded notional climbed by 74.3% to \$8.5 trillion, including \$152.8 billion of basis swaps. Trade count rose by 43.1% to 37.5 thousand, including 1.4 thousand basis swaps.
- SARON-linked IRD traded notional increased to \$145.7 billion, including \$14.9 billion of basis swaps. Trade count grew to 3.2 thousand, including 127 basis swaps.
- TONA-linked IRD traded notional increased to \$645.5 billion, including \$159.2 billion of basis swaps. Trade count grew to 8.7 thousand, including 1.6 thousand basis swaps.
- €STR-linked IRD traded notional rose to \$2.7 trillion, including \$258.7 billion of basis swaps. Trade count grew to 9.4 thousand, including 1.8 thousand basis swaps¹³.

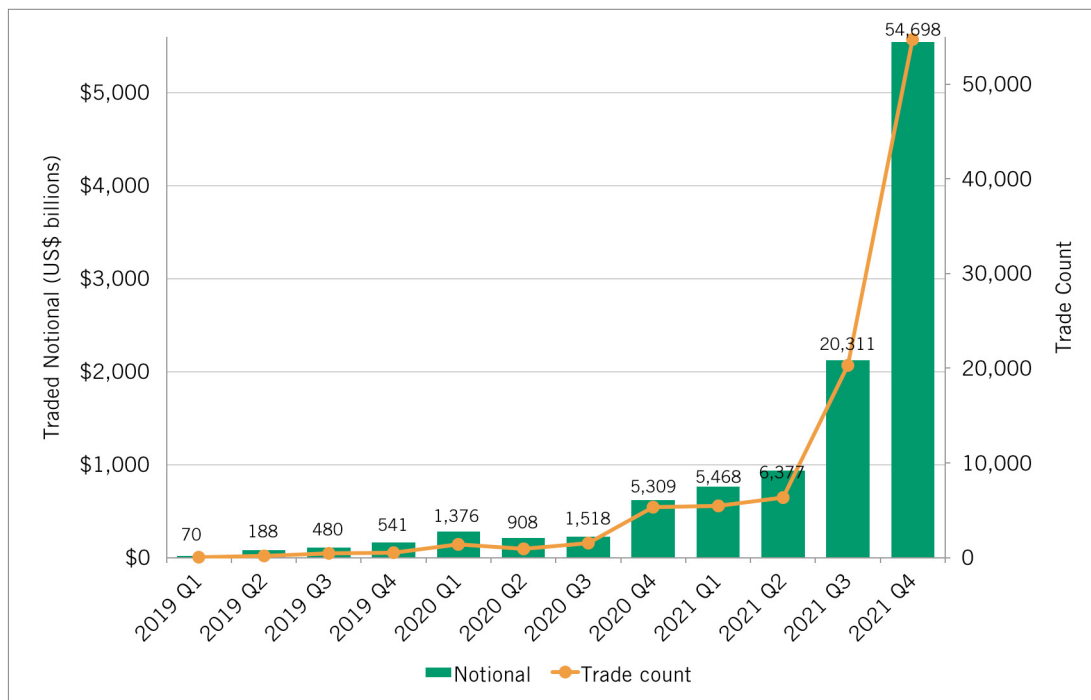
¹³ €STR swaps started trading in the fourth quarter of 2019

SOFR

Trading activity in SOFR-linked OTC IRD increased significantly in 2021. The rise was primarily driven by the SOFR First initiative that started on July 26, 2021^{14,15}. In 2021, SOFR-linked OTC IRD traded notional grew to \$9.4 trillion from \$1.3 trillion in 2020. Total trade count increased to 86.9 thousand from 9.1 thousand over the same period.

Traded notional of IRD referencing SOFR increased by 161.4% to \$5.5 trillion in the fourth quarter of 2021 versus \$2.1 trillion in the third quarter of 2021. The number of SOFR-linked IRD transactions increased by 169.3% to 54.7 thousand from 20.3 thousand over the same period (see Chart 3).

Chart 3: SOFR Traded Notional and Trade Count



Source: DTCC SDR

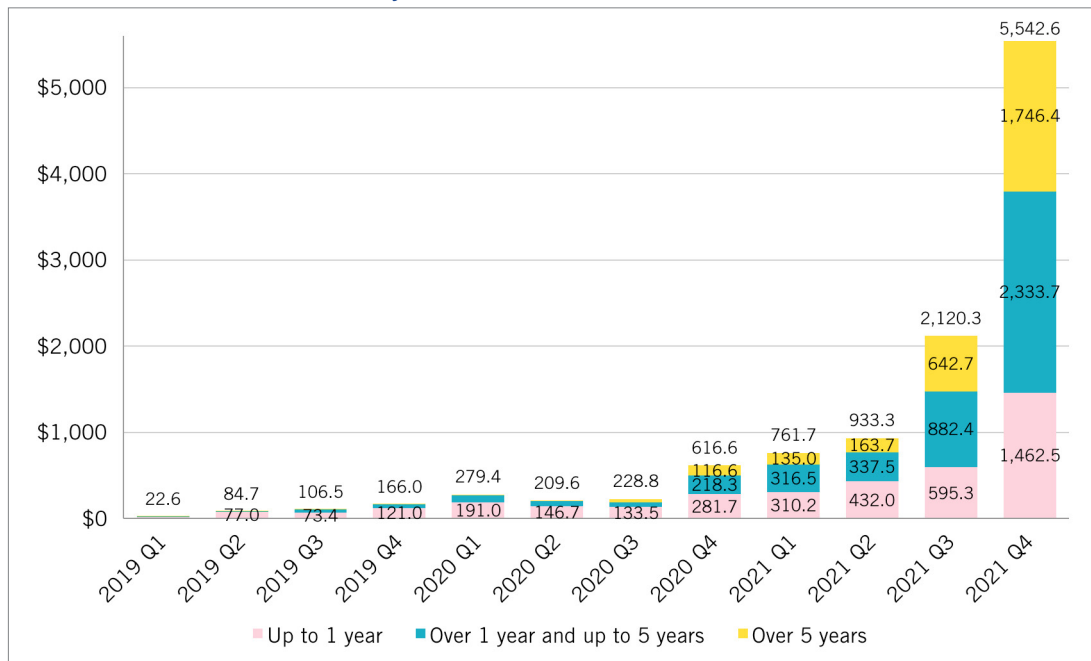
Of the \$5.5 trillion of SOFR-linked IRD traded notional in the fourth quarter of 2021, \$1.5 trillion (26.4%) had a tenor up to one year, \$2.3 trillion (42.1%) was between one and five years and \$1.8 trillion (31.5%) had a tenor over five years¹⁶ (see Chart 4).

¹⁴ SOFR First is a phased initiative for switching interdealer trading conventions from LIBOR to SOFR for US dollar linear interest rate swaps, cross-currency swaps, non-linear derivatives and exchange-traded derivatives. Having started with interdealer linear interest rate swaps on July 26, 2021, SOFR First was extended to cross-currency swaps on September 21, 2021 and non-linear derivatives on November 8, 2021 www.cftc.gov/PressRoom/PressReleases/8409-21

¹⁵ Instead of setting a date for exchange-traded derivatives, the Interest Rate Benchmark Reform Subcommittee of the CFTC's MRAC issued a User Guide for Exchange Traded Derivatives Transactions that encourages all market participants to ensure operational capability to transact SOFR exchange-traded derivatives as soon as possible. It also notes it would be best practice for all market participants to replace use of LIBOR with SOFR for new contracts, including exchange-traded derivatives, after the end of 2021 www.cftc.gov/PressRoom/PressReleases/8469-21

¹⁶ Tenor is calculated as the difference between the effective date and the maturity date

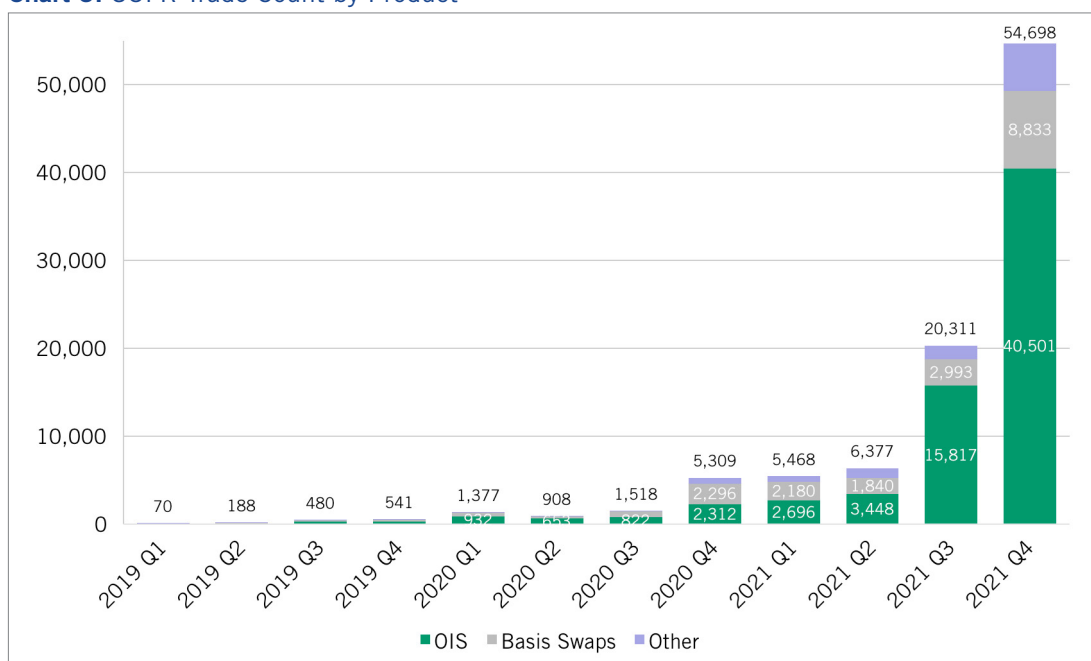
Chart 4: SOFR Traded Notional by Tenor (US\$ billions)



Source: DTCC SDR

Overnight index swaps (OIS) accounted for the majority of SOFR-linked contracts in the fourth quarter of 2021. Of the 54.7 thousand transactions, 40.5 thousand were OIS, 8.8 thousand were basis swaps and 5.4 thousand were other transactions, including fixed-for-floating interest rate swaps and cap/floor products (see Chart 5).

Chart 5: SOFR Trade Count by Product



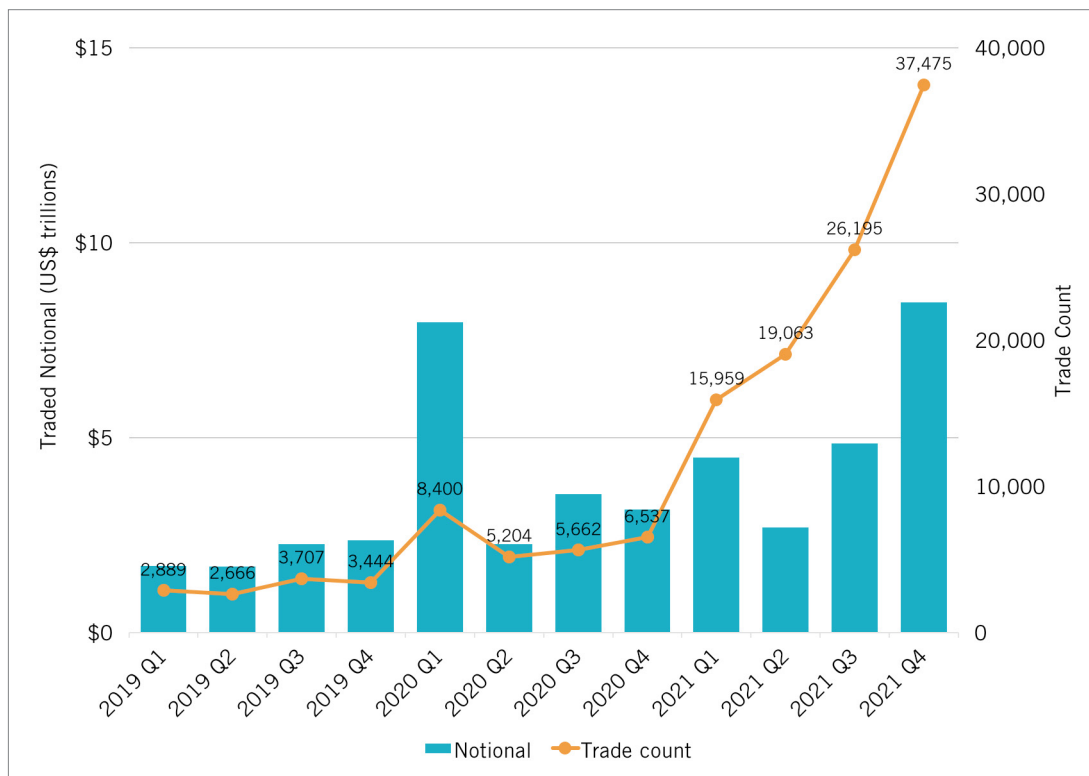
Source: DTCC SDR

SONIA

SONIA-linked OTC IRD traded notional increased by 21.1% to \$20.5 trillion in 2021 from \$17.0 trillion in 2020. Trade count jumped by 282.5% to 98.7 thousand from 25.8 thousand over the same period¹⁷.

Traded notional of OTC IRD referencing SONIA rose by 74.3% to \$8.5 trillion in the fourth quarter of 2021 from \$4.9 trillion in the third quarter of 2021. Trade count increased by 43.1% from 26.2 thousand to 37.5 thousand over the same period (see Chart 6).

Chart 6: SONIA Traded Notional and Trade Count

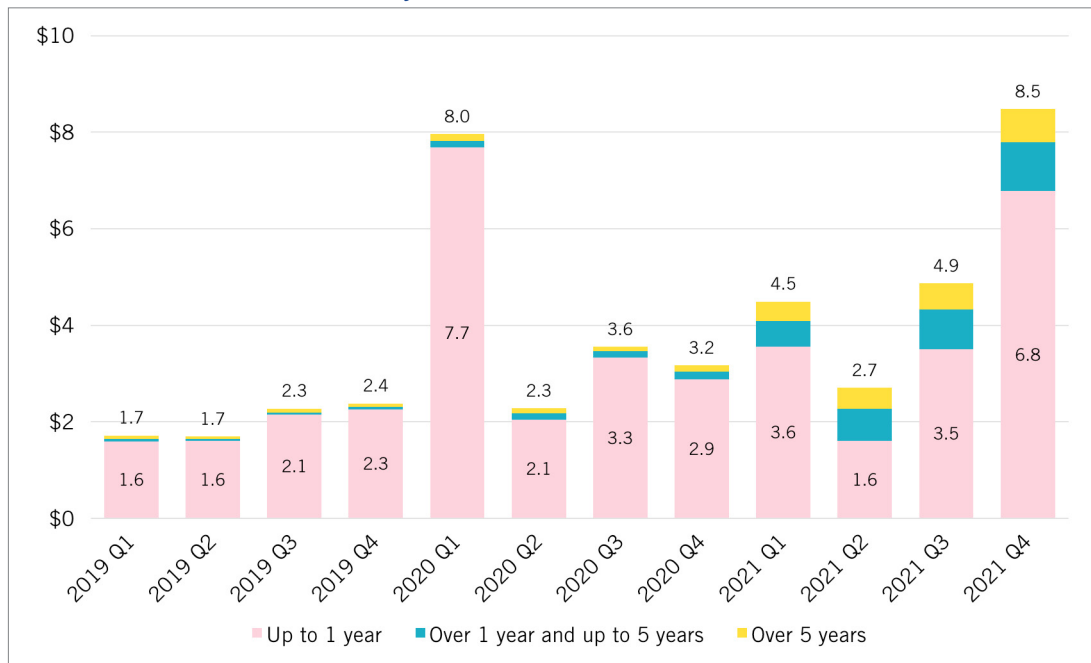


Source: DTCC SDR

Most transactions referencing SONIA had a tenor up to one year. Of the \$8.5 trillion of SONIA-linked IRD traded notional in the fourth quarter of 2021, \$6.8 trillion (80.1%) had a tenor up to one year, \$1.0 trillion (11.9%) was between one and five years and \$685.9 billion (8.1%) had a tenor over five years (see Chart 7).

¹⁷ The difference between the rate of increase of SONIA-linked traded notional and trade count was due to a smaller transaction size

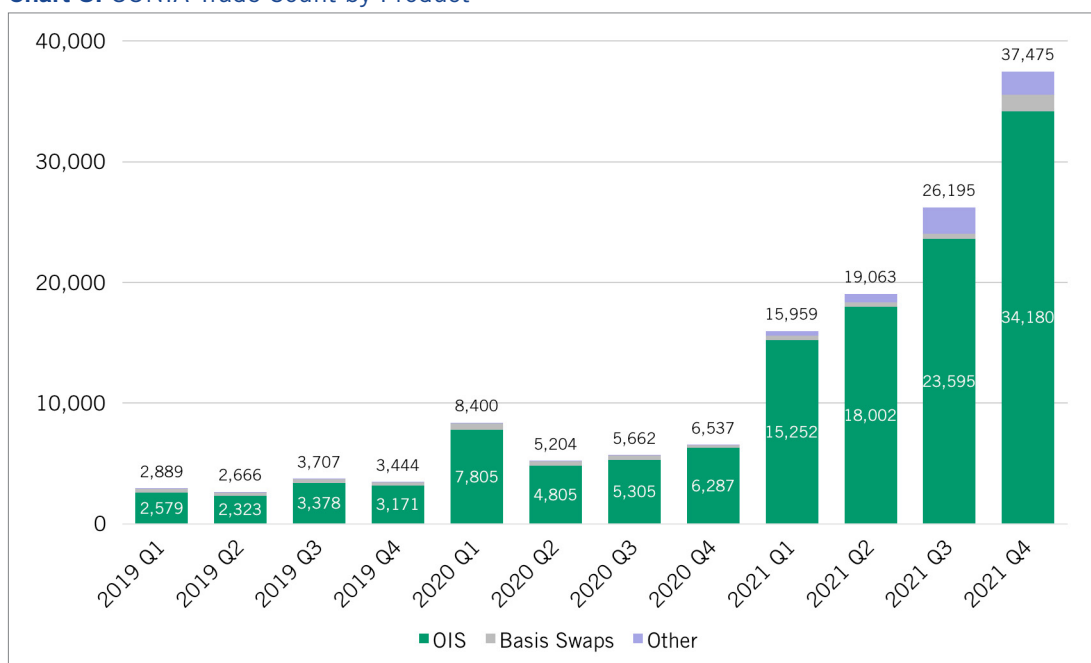
Chart 7: SONIA Traded Notional by Tenor (US\$ trillions)



Source: DTCC SDR

OIS accounted for the majority of SONIA-linked OTC IRD trade count. Of the 37.5 thousand SONIA-linked IRD trades in the fourth quarter of 2021, 34.2 thousand were OIS transactions, 1.4 thousand were basis swaps and 1.9 thousand were other products (see Chart 8).

Chart 8: SONIA Trade Count by Product



Source: DTCC SDR

Table 1: US IRD Traded Notional and Trade Count: Q4 2021 and Full Year 2021

	Q4 2021		Full Year 2021	
	Traded Notional (US\$ billions)	Trade Count	Traded Notional (US\$ billions)	Trade Count
USD LIBOR	18,649.9	133,647	93,512.7	652,951
SOFR	4,133.6	45,865	6,680.8	71,008
Basis Swaps: SOFR	1,409.4	8,833	2,677.3	15,846
GBP LIBOR	822.1	10,313	9,757.9	74,659
SONIA	8,327.7	36,077	20,189.7	96,140
Basis Swaps: SONIA	152.8	1,398	350.1	2,552
CHF LIBOR	64.3	1,323	536.8	10,017
SARON	130.8	3,046	228.4	4,465
Basis Swaps: SARON	14.9	127	17.7	167
JPY LIBOR	79.4	4,255	2,200.5	31,902
TIBOR/Euroyen TIBOR	1.4	26	17.8	184
TONA	486.3	7,127	800.8	10,038
Basis Swaps: TONA	159.2	1,578	194.1	1,872
EUR LIBOR	0.9	9	2.0	23
EURIBOR	8,896.0	83,834	38,382.7	336,168
€STR	2,398.1	7,646	2,687.3	9,053
Basis Swaps: €STR	258.7	1,781	290.2	1,957
Other*	14,988.9	138,148	53,137.8	582,822
Total**	60,974.6	485,033	231,664.6	1,901,824

*Other includes IRD with other reference rates, IBOR/non-RFR basis swaps and IBOR/IBOR basis swaps that reference different IBORs IBOR/IBOR basis swaps that reference the same IBOR are included in a corresponding IBOR category
RFR/RFR basis swaps that reference different RFRs are included in both RFR basis swaps categories and, therefore, are double-counted
**This data includes only the transactions required to be disclosed under U.S. regulations and does not include any exchange-traded derivatives (futures)

Source: DTCC SDR

Table 2: US IRD Traded Notional and Trade Count: Q4 2021 vs. Q3 2021

	Q4 2021		Q3 2021		Q4 2021 vs. Q3 2021	
	Traded Notional (US\$ billions)	Trade Count	Traded Notional (US\$ billions)	Trade Count	Traded Notional	Trade Count
USD LIBOR	18,649.9	133,647	18,772.4	143,132	-0.7%	-6.6%
SOFR	5,543.0	54,698	2,120.2	20,311	161.4%	169.3%
GBP LIBOR	822.1	10,313	1,646.6	11,176	-50.1%	-7.7%
SONIA	8,480.6	37,475	4,865.8	26,195	74.3%	43.1%
CHF LIBOR	64.3	1,323	90.7	2,134	-29.0%	-38.0%
SARON	145.7	3,173	81.7	1,221	78.4%	159.9%
JPY LIBOR	79.4	4,255	356.9	5,091	-77.8%	-16.4%
TIBOR/Euroyen TIBOR	1.4	26	4.9	70	-71.5%	-62.9%
TONA	645.5	8,705	204.5	2,730	215.6%	218.9%
EUR LIBOR	0.9	9	0.0	0		
EURIBOR	8,896.0	83,834	8,819.2	77,418	0.9%	8.3%
€STR	2,656.8	9,427	184.1	854	1343.0%	1003.9%
Other*	14,988.9	138,148	12,521.3	144,951	19.7%	-4.7%
Total**	60,974.6	485,033	49,668.4	435,283	22.8%	11.4%

*Other includes IRD with other reference rates, IBOR/non-RFR basis swaps and IBOR/IBOR basis swaps that reference different IBORs IBOR/IBOR basis swaps that reference the same IBOR are included in a corresponding IBOR category
RFR/RFR basis swaps that reference different RFRs are included in both RFR basis swaps categories and, therefore, are double-counted
**This data includes only the transactions required to be disclosed under U.S. regulations and does not include any exchange-traded derivatives (futures)

Source: DTCC SDR

Table 3: US IRD Traded Notional and Trade Count: Full Year 2021 vs. Full Year 2020

	Full Year 2021		Full Year 2020		Full Year 2021 vs. Full Year 2020	
	Traded Notional (US\$ billions)	Trade Count	Traded Notional (US\$ billions)	Trade Count	Traded Notional	Trade Count
USD LIBOR	93,512.7	652,951	105,949.7	691,820	-11.7%	-5.6%
SOFR	9,358.1	86,854	1,334.5	9,112	601.3%	853.2%
GBP LIBOR	9,757.9	74,659	13,408.5	115,435	-27.2%	-35.3%
SONIA	20,539.8	98,692	16,961.3	25,803	21.1%	282.5%
CHF LIBOR	536.8	10,017	535.3	11,618	0.3%	-13.8%
SARON	246.1	4,632	32.6	77	655.4%	5915.6%
JPY LIBOR	2,200.5	31,902	3,343.9	34,740	-34.2%	-8.2%
TIBOR/Euroyen TIBOR	17.8	184	9.2	69	93.9%	166.7%
TONA	994.9	11,910	249.5	630	298.8%	1790.5%
EUR LIBOR	2.0	23	1.91	45	5.6%	-48.9%
EURIBOR	38,382.7	336,168	21,075.2	199,771	82.1%	68.3%
€STR	2,977.4	11,010	85.5	523	3382.5%	2005.2%
Other*	53,137.8	582,822	66,735.0	497,426	-20.4%	17.2%
Total**	231,664.6	1,901,824	229,722.0	1,587,069	0.8%	19.8%

*Other includes IRD with other reference rates, IBOR/non-RFR basis swaps and IBOR/IBOR basis swaps that reference different IBORs IBOR/IBOR basis swaps that reference the same IBOR are included in a corresponding IBOR category
RFR/RFR basis swaps that reference different RFRs are included in both RFR basis swaps categories and, therefore, are double-counted
**This data includes only the transactions required to be disclosed under U.S. regulations and does not include any exchange-traded derivatives (futures)

Source: DTCC SDR

Table 4: US RFR-linked IRD Traded Notional and Trade Count by Tenor: Q4 2021 and Full Year 2021

	Q4 2021		Full Year 2021	
	Traded Notional (US\$ billions)	Trade Count	Traded Notional (US\$ billions)	Trade Count
SOFR	5,543.0	54,698	9,358.1	86,854
Up to 1 year	1,462.5	3,395	2,799.8	5,245
Over 1 year and up to 5 years	2,334.2	21,256	3,870.6	35,716
Over 5 years	1,746.4	30,047	2,687.8	45,893
SONIA	8,480.6	37,475	20,539.8	98,692
Up to 1 year	6,789.7	4,990	15,456.1	11,725
Over 1 year and up to 5 years	1,005.0	11,365	3,015.4	31,286
Over 5 years	685.9	21,120	2,068.3	55,681
SARON	145.7	3,173	246.1	4,632
Up to 1 year	30.1	158	68.6	254
Over 1 year and up to 5 years	88.0	1,736	134.7	2,506
Over 5 years	27.6	1,279	42.8	1,872
TONA	645.5	8,705	994.9	11,910
Up to 1 year	200.8	670	388.1	1,107
Over 1 year and up to 5 years	281.5	2,992	375.2	4,013
Over 5 years	163.1	5,043	231.6	6,790
€STR	2,656.8	9,427	2,977.4	11,010
Up to 1 year	1,832.0	1,898	2,079.1	2,253
Over 1 year and up to 5 years	610.6	3,874	658.3	4,414
Over 5 years	214.2	3,655	240.1	4,343

RFR/RFR basis swaps that reference different RFRs are included in both RFR basis swaps categories and, therefore, are double-counted
This data includes only the transactions required to be disclosed under U.S. regulations and does not include any exchange-traded derivatives (futures)

Source: DTCC SDR

Table 5: US RFR-linked IRD Traded Notional and Trade Count by Product

	Q4 2021		Full Year 2021	
	Traded Notional (US\$ billions)	Trade Count	Traded Notional (US\$ billions)	Trade Count
SOFR	5,543.0	54,698	9,358.1	86,854
OIS	3,720.2	40,501	6,136.6	62,462
Basis Swaps	1,409.4	8,833	2,677.3	15,846
Fixed-for-Floating IRS	36.8	1,144	57.5	1,525
Cross Currency IRS	2.1	62	5.1	150
Inflation Swaps	0.0	0	0.0	0
Exotics	33.8	809	82.5	1,925
Options	286.2	2,433	313.6	2,929
Cap Floor	54.5	916	85.6	2,017
SONIA	8,480.6	37,475	20,539.8	98,692
OIS	8,122.7	34,180	19,478.7	91,029
Basis Swaps	152.8	1,398	350.1	2,552
Fixed-for-Floating IRS	2.0	19	20.6	83
Cross Currency IRS	0.9	9	2.5	27
Inflation Swaps	0.0	0	0.0	0
Exotics	2.3	19	7.3	54
Options	176.5	1,737	608.1	4,672
Cap Floor	23.4	113	72.5	275
SARON	145.7	3,173	246.1	4,632
OIS	130.8	3,045	228.3	4,464
Basis Swaps	14.9	127	17.7	167
Fixed-for-Floating IRS	0.0	0	0.0	0
Cross Currency IRS	0.1	1	0.1	1
Inflation Swaps	0.0	0	0.0	0
Exotics	0.0	0	0.0	0
Options	0.0	0	0.0	0
Cap Floor	0.0	0	0.0	0
TONA	645.5	8,705	994.9	11,910
OIS	430.5	6,263	727.0	8,929
Basis Swaps	159.2	1,578	194.1	1,872
Fixed-for-Floating IRS	0.5	14	1.2	20
Cross Currency IRS	0.0	0	0.0	1
Inflation Swaps	0.0	0	0.0	0
Exotics	0.0	0	0.0	1
Options	55.2	849	71.9	1,072
Cap Floor	0.0	1	0.6	15
€STR	2,656.8	9,427	2,977.4	11,010
OIS	2,395.6	7,643	2,684.7	9,050
Basis Swaps	258.7	1,781	290.2	1,957
Fixed-for-Floating IRS	2.5	2	2.5	2
Cross Currency IRS	0.0	0	0.0	0
Inflation Swaps	0.0	0	0.0	0
Exotics	0.1	1	0.1	1
Options	0.0	0	0.0	0
Cap Floor	0.0	0	0.0	0

RFR/RFR basis swaps that reference different RFRs are included in both RFR basis swaps categories and, therefore, are double-counted
This data includes only the transactions required to be disclosed under U.S. regulations and does not include any exchange-traded derivatives (futures)

Source: DTCC SDR

IBOR-LINKED OTC IRD IN THE US

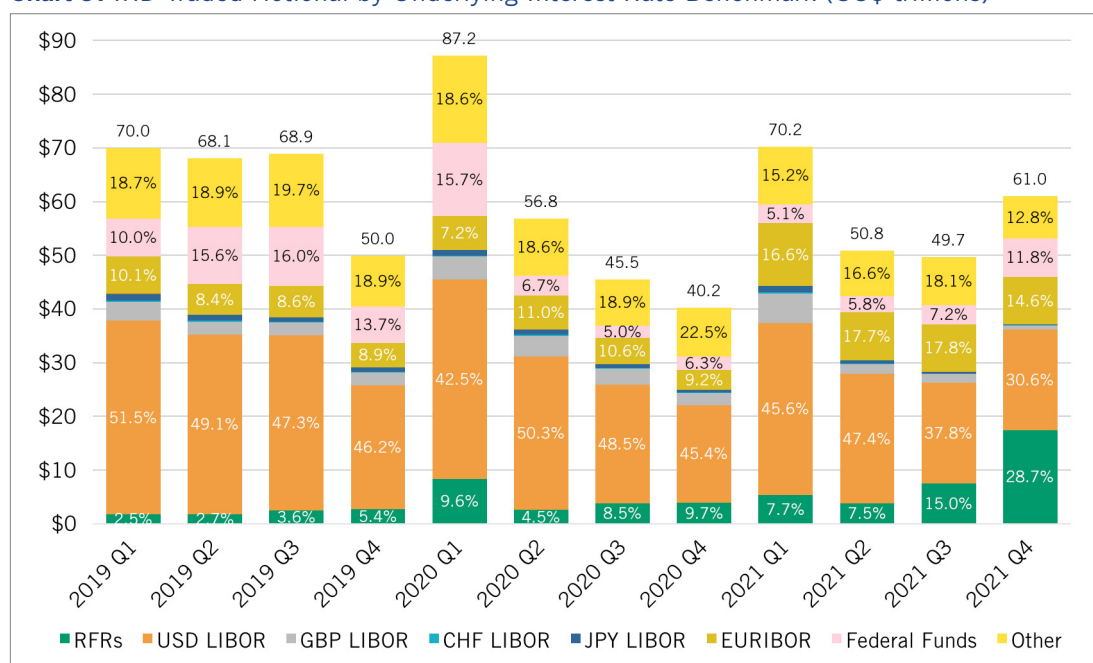
US-reported OTC IRD traded notional referencing LIBOR denominated in US dollars, sterling, Swiss franc, yen and euro, as well as EURIBOR and TIBOR, remained relatively flat at \$144.4 trillion in 2021 compared to 2020. These IBORs represented 62.3% of total IRD traded notional in 2021 compared to 62.8% in 2020. The number of IRD trades referencing IBORs totaled 1.1 million in 2021, almost unchanged from 2020.

IRD traded notional referencing LIBOR denominated in US dollars, sterling, Swiss franc, yen and euro, as well as EURIBOR and TIBOR, equaled \$28.5 trillion in the fourth quarter of 2021, representing 46.8% of total IRD traded notional¹⁸. The number of IRD trades referencing IBORs totaled 233.4 thousand, accounting for 48.1% of total IRD trade count.

IRD traded notional based on US dollar LIBOR equaled \$18.6 trillion, accounting for 30.6% of total IRD traded notional in the fourth quarter of 2021¹⁹ (see Chart 9). EURIBOR and sterling LIBOR IRD traded notional was \$8.9 trillion and \$822.1 billion, respectively. IRD traded notional referencing the effective federal funds rate totaled \$7.2 trillion and accounted for 11.8% of IRD traded notional.

In comparison, IRD traded notional referencing LIBOR denominated in US dollar, sterling, Swiss franc, yen and euro, as well as EURIBOR and TIBOR, equaled \$29.7 trillion and represented 59.8% of total IRD traded notional in the third quarter of 2021.

Chart 9: IRD Traded Notional by Underlying Interest Rate Benchmark (US\$ trillions)



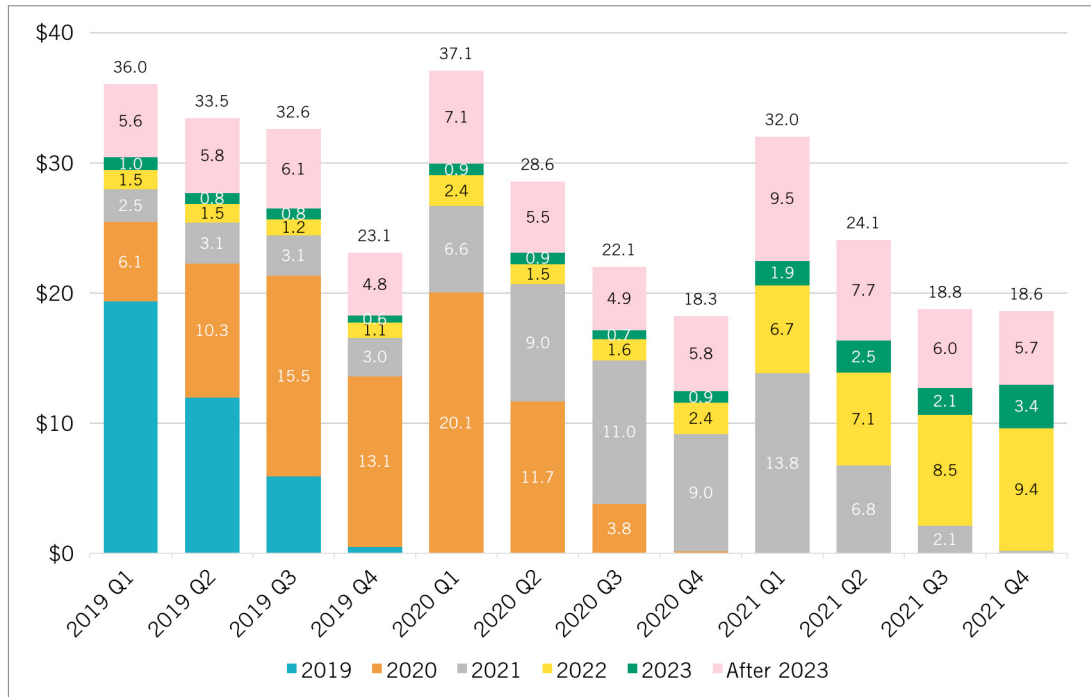
Source: DTCC SDR

¹⁸ This data covers only transactions that are required to be disclosed under US regulations

¹⁹ RFR/RFR basis swaps that reference different RFRs are double counted. These swaps totaled about \$0.6 trillion in the fourth quarter of 2021

Of the \$18.7 trillion of US dollar LIBOR-linked IRD traded notional in the fourth quarter of 2021, \$0.2 trillion had a 2021 maturity, \$9.4 trillion had a 2022 maturity and \$5.7 trillion had a maturity after 2023 (see Chart 10).

Chart 10: US dollar LIBOR IRD Traded Notional by Maturity (US\$ trillions)



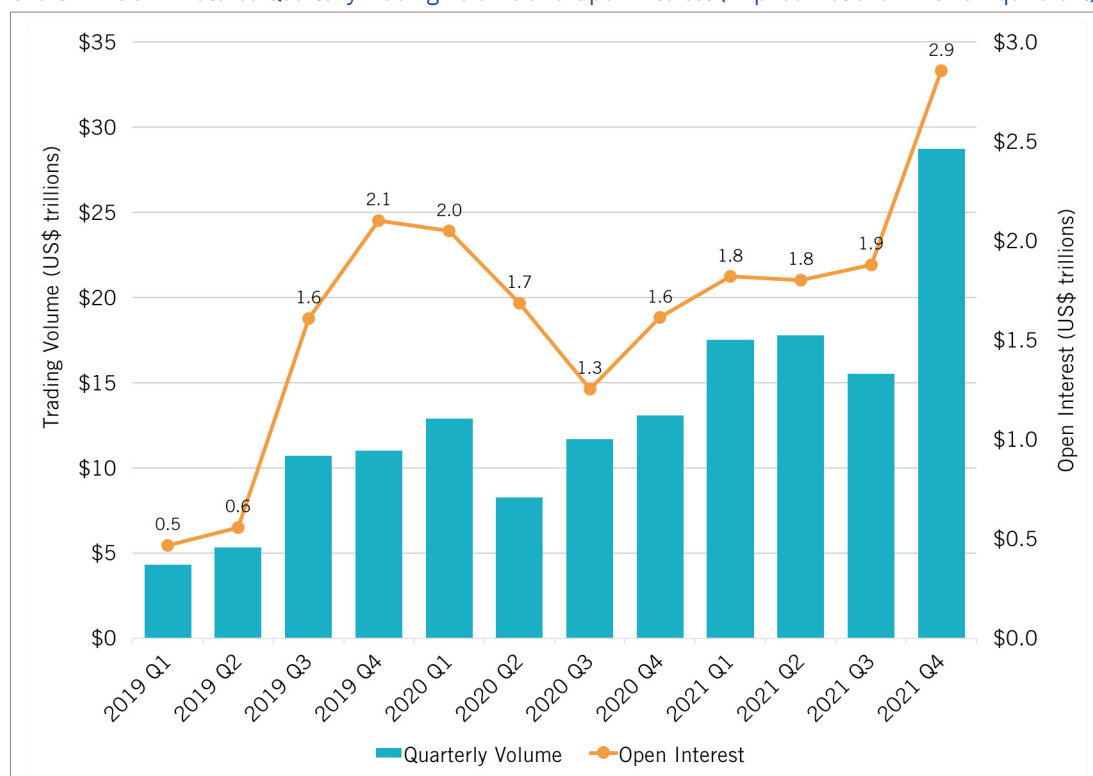
Source: DTCC SDR

SOFR AND SONIA FUTURES

Trading volume in SOFR futures increased by 73.3% to \$79.6 trillion in 2021 compared to \$45.9 trillion in 2020. Open interest climbed to \$2.9 trillion at the end of December 2021 versus \$1.6 trillion at the end of December 2020²⁰.

Trading volume in SOFR futures rose by 85.2% to \$28.7 trillion in the fourth quarter of 2021 from \$15.5 trillion in the third quarter of 2021 (see Chart 11).

Chart 11: SOFR Futures Quarterly Trading Volume and Open Interest (Implied Notional in OTC Equivalent)



Source: CME and ICE

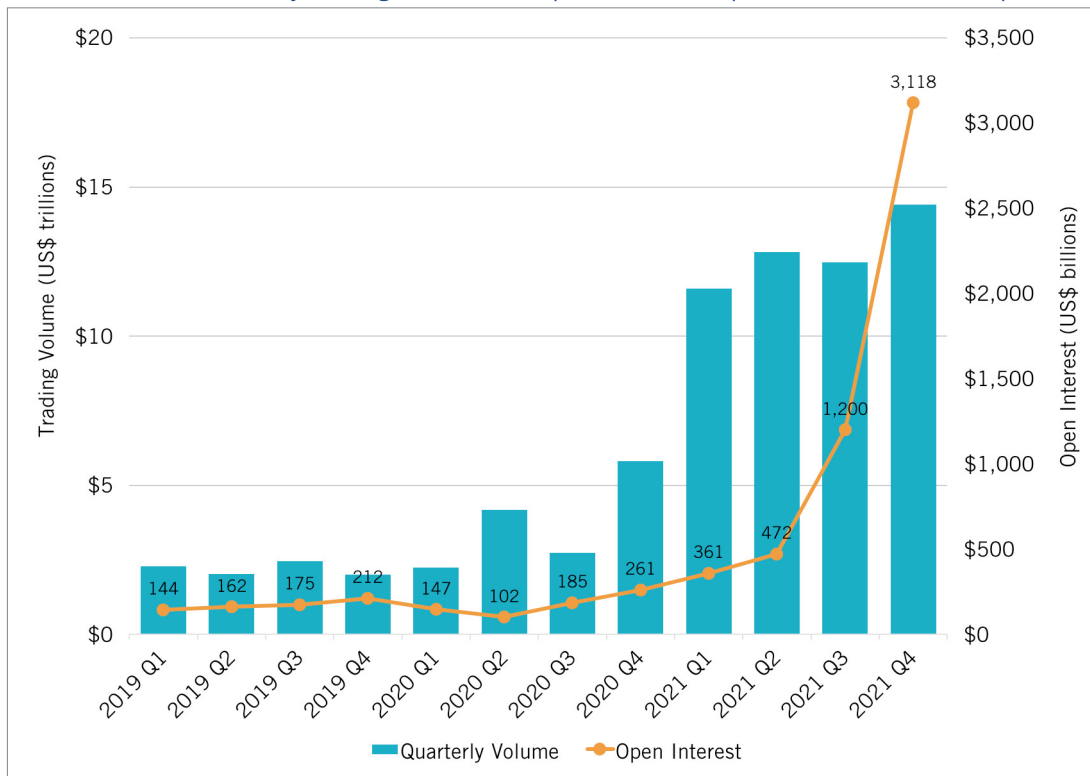
Trading volume in SONIA futures increased by 242.9% to \$51.3 trillion in 2021 from \$15.0 trillion in 2020. Open interest grew to \$3.1 trillion at the end of December 2021 versus \$261.3 billion at the end of December 2020²¹.

Trading volume in SONIA futures increased to \$14.4 trillion in the fourth quarter of 2021 from \$12.5 trillion in the previous quarter (see Chart 12).

²⁰ The analysis of trading activity in SOFR exchange-traded futures is based on data from CME and ICE

²¹ The analysis of trading activity in SONIA exchange-traded futures is based on data from CME, ICE and LCH

Chart 12: SONIA Quarterly Trading Volume and Open Interest (Implied Notional in OTC Equivalent)



Source: CME, ICE and LCH



ISDA has published other recent research papers:

- ***ISDA-Clarus RFR Adoption Indicator: December 2021***

<https://www.isda.org/a/OP6gE/ISDA-Clarus-RFR-Adoption-Indicator-December-2021.pdf>

- ***Interest Rate Derivatives Trading Activity in the EU, UK and US: October 2021***

<https://www.isda.org/a/sn6gE/Interest-Rate-Derivatives-Trading-Activity-Reported-in-EU-UK-and-US-Markets-Oct-2021.pdf>

- ***Transition to RFRs Review: Third quarter of 2021 and Year-to-September 2021***

<https://www.isda.org/a/X8SgE/Transition-to-RFRs-Review-Third-Quarter-of-2021-and-Year-to-September-30-2021.pdf>

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The [ISDA-Brattle microsite](#) provides background information about the IBOR Fallbacks, including adoption rates for the IBOR Fallbacks Protocol, graphs comparing certain fallback rates for LIBOR to LIBOR in the corresponding currency and information about the consultations that resulted in the final fallbacks.



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