SONIA Futures Settlement Calculation

CME plans to list Quarterly IMM SONIA futures and MPC SONIA futures for first trade date of Monday, October 1, 2018, pending certification of terms and conditions with the Commodity Futures Trading Commission and completion of all regulatory review periods. This note expounds on the settlement calculation methodologies, naming conventions, and holiday calendars for both SONIA futures products.

CME Quarterly IMM SONIA Futures Final Settlement

The final settlement price for an expiring Quarterly IMM SONIA (SON) futures contract is 100 minus compounded daily SONIA interest during tthe contract's Reference Quarter. The Reference Quarter for any SON futures contract is the interval from (and including) the 3rd Wednesday of the third month prior to the contract delivery month, to (and not including) the 3rd Wednesday of the delivery month.

The definitions in the array to the right make this more precise.

Exhibit 1 on the following page illustrates the final settlement price calculation for hypothetical March 2018 SON futures.

Final Settlement Price = 100 - R

R	$([\Pi i=1 \ldots N \{1+(di / 365)*(ri / 100)\}] -1) \times (365/D) \times 100$
N	Number of London Bank Business days (business days) in Reference Quarter
i	Running variable indexing London Bank Business days during Reference Quarter
Π_i	Capital pi (Π) indicates the terms of the series should be compounded. It is the product of values indexed by the running variable, i= 1,2,...,N.
r_i[1]	SONIA value for i^{th} London Bank Business day
d_i	Number of calendar days to which r_i applies
D	Number of calendar days in Reference Quarter (ie, $D = \Sigma_i d_i$)

Examples in the table to the right highlight three hypothetical instances in which a non-business day results in a period of accrued simple interest, but no compounding:

The SONIA value for any given business day is published on the next business day Ie, the SONIA value for Monday is published Tuesday morning at 9.00am London time. Accordingly, the Exchange will compute an expiring contract's final settlement price on the morning of the first business day following the contract's last trading day, when the SONIA value for the last day of the contract's Reference Quarter becomes available. The final settlement price is computed so that the value of R, the contract interest rate, is rounded to the nearest 1/10,000th of a percentage point (ie, the nearest 1/100th of one basis point, or 0.0001 percent per annum). In the case of a tie (a rate that ends with 0.00005 in percent per annum terms) the value of R will be rounded up.

Weekend	Thursday	Friday	Saturday	Sunday	Monday
April	12	13	14	15	16
SONIA benchmark rate (r_i)*	0.4637	0.4657	no rate Weekend		0.4659
Days in period (d_i)	1	3			1
$\{1+(d_i/365)*(r_i/100)\}$	1.000012704	1.000038277			1.000012764

** SONIA benchmark rate (r_i) is published by the Bank of England on day i + 1*

Mid-week holiday	Monday	Tuesday	Wednesday	Thursday	Friday
December	24	25	26	27	28
SONIA benchmark rate (r_i)*	0.7042	no rate Christmas Day	no rate Boxing Day	0.7058	0.7077
Days in period (d_i)	3			1	1
$\{1+(d_i/365)*(r_i/100)\}$	1.000057879			1.000019337	1.000019389

Rates in the above December 2018 example are hypothetical

Long weekend	Friday	Saturday	Sunday	Monday	Tuesday
May	4	5	6	7	8
SONIA benchmark rate (r_i)*	0.4556	no rate Weekend		no rate May day	0.4542
Days in period (d_i)	4				1
$\{1+(d_i/365)*(r_i/100)\}$	1.000049929				1.000012444

1 The SONIA benchmark rate (r_i) is published by the Bank of England on the next good business day i+1 (ie one business day after the transaction date)

Exhibit 1—Final Settlement Quarterly-IMM SONIA March 2018

Transaction Day	Publication Day	SONIA (percent)	DIAF[2]
21-Mar-18	22-Mar-18	0.4667	1.00001279
22-Mar-18	23-Mar-18	0.4634	1.00001270
23-Mar-18	26-Mar-18	0.468	1.00003847
26-Mar-18	27-Mar-18	0.4666	1.00001278
27-Mar-18	28-Mar-18	0.4652	1.00001275
28-Mar-18	29-Mar-18	0.4638	1.00001271
29-Mar-18	03-Apr-18	0.4435	1.00006075
03-Apr-18	04-Apr-18	0.4652	1.00001275
04-Apr-18	05-Apr-18	0.4624	1.00001267
05-Apr-18	06-Apr-18	0.4653	1.00001275
06-Apr-18	09-Apr-18	0.4666	1.00003835
09-Apr-18	10-Apr-18	0.4651	1.00001274
10-Apr-18	11-Apr-18	0.4666	1.00001278
11-Apr-18	12-Apr-18	0.4633	1.00001269
12-Apr-18	**13-Apr-18**	**0.4637**	**1.00001270**
13-Apr-18	**16-Apr-18**	**0.4657**	**1.00003828**
16-Apr-18	**17-Apr-18**	**0.4659**	**1.00001276**
17-Apr-18	18-Apr-18	0.4664	1.00001278
18-Apr-18	19-Apr-18	0.467	1.00001279
19-Apr-18	20-Apr-18	0.4651	1.00001274
20-Apr-18	23-Apr-18	0.4646	1.00003819
23-Apr-18	24-Apr-18	0.4529	1.00001241
24-Apr-18	25-Apr-18	0.4537	1.00001243
25-Apr-18	26-Apr-18	0.454	1.00001244
26-Apr-18	27-Apr-18	0.4549	1.00001246
27-Apr-18	30-Apr-18	0.4548	1.00003738
30-Apr-18	01-May-18	0.4507	1.00001235
01-May-18	02-May-18	0.4497	1.00001232
02-May-18	03-May-18	0.4515	1.00001237
03-May-18	04-May-18	0.4527	1.00001240
04-May-18	**08-May-18**	**0.4556**	**1.00004993**
08-May-18	**09-May-18**	**0.4542**	**1.00001244**
09-May-18	10-May-18	0.4553	1.00001247
10-May-18	11-May-18	0.4539	1.00001244
11-May-18	14-May-18	0.4542	1.00003733
14-May-18	15-May-18	0.4513	1.00001236
15-May-18	16-May-18	0.4511	1.00001236
16-May-18	17-May-18	0.4528	1.00001241
17-May-18	18-May-18	0.4533	1.00001242
18-May-18	21-May-18	0.454	1.00003732
21-May-18	22-May-18	0.4527	1.00001240
22-May-18	23-May-18	0.4521	1.00001239
23-May-18	24-May-18	0.4533	1.00001242
24-May-18	25-May-18	0.4532	1.00001242
25-May-18	29-May-18	0.4533	1.00004968
29-May-18	30-May-18	0.4537	1.00001243
30-May-18	31-May-18	0.4519	1.00001238
31-May-18	01-Jun-18	0.4503	1.00001234
01-Jun-18	04-Jun-18	0.4544	1.00003735
04-Jun-18	05-Jun-18	0.4522	1.00001239
05-Jun-18	06-Jun-18	0.4525	1.00001240
06-Jun-18	07-Jun-18	0.4519	1.00001238
07-Jun-18	08-Jun-18	0.4531	1.00001241
08-Jun-18	11-Jun-18	0.4535	1.00003727
11-Jun-18	12-Jun-18	0.4514	1.00001237
12-Jun-18	13-Jun-18	0.4501	1.00001233
13-Jun-18	14-Jun-18	0.4489	1.00001230
14-Jun-18	15-Jun-18	0.4512	1.00001236
15-Jun-18	18-Jun-18	0.4505	1.00003703
18-Jun-18	19-Jun-18	0.4515	1.00001237
19-Jun-18	20-Jun-18	0.4507	1.00001235

Π_i Term	1.00113834
Annualized(subtract 1 multiply by 365/91)	0.45659%
Rounded to Nearest 1/100 BP:	0.45660%
Contract Settlement:	99.5434

The weekend, mid-week holiday, and long weekend examples from the previous page are highlighted in the above tables.

What are They Called?

A Quarterly IMM SONIA futures final settlement price will be based upon compounded daily values of the SONIA benchmark over a forward looking period between two IMM dates. **The contract month symbol will reference the month in which the Reference Quarter begins, not the month in which final settlement occurs. The final settlement month will be three months after the contract month referenced in the contract code.**

CME Group Quarterly-IMM SONIA Codes for 2018/19:

Month	CME Group
September 18	SONU8
December 18	SONZ8
March 19	SONH9
June 19	SONM9

*Daily Interest Accumulation Factor = {1+(Day Count/365) * SONIA in %} or {1+(d_i/365)*(r_i/100)} from the calculation formula*

MPC SONIA Futures Final Settlement

Similar to SON futures, the final settlement price for an expiring MPC SONIA futures contract is 100 minus the SONIA benchmark rate **compounded** over a specified contract's Reference Period. For an MPC SONIA futures contract, the Reference Period spans from the confirmed date of one Bank of England Monetary Policy Committee (MPC) meeting up to the day prior to the next following MPC meeting.

Exhibit 2 nearby illustrates with final settlement price calculation for a hypothetical June 2018 MPC futures contract.

What are They Called?

A MPC SONIA futures final settlement price will reference daily compounded SONIA over a given Reference Period. **The month symbol in the contract code will reference the month in which the Reference Period begins, not the month in which the contract comes to final settlement. The final settlement month will be the month in which the Reference Period ends.**

CME Group MPC SONIA Codes for 2018/19:

Month	CME Group
September 18	MPCU8
November 18	MPCX8
December 18	MPCZ8
February 19	MPCG9

Exhibit 2—Final Settlement June 2018 MPC SONIA

Transaction Day	Publication Day	SONIA (percent)	DIAF [2]
21-Jun-18	22-Jun-18	0.4513	1.00001236
22-Jun-18	25-Jun-18	0.4491	1.00003691
25-Jun-18	26-Jun-18	0.4512	1.00001236
26-Jun-18	27-Jun-18	0.4498	1.00001232
27-Jun-18	28-Jun-18	0.4495	1.00001232
28-Jun-18	29-Jun-18	0.4515	1.00001237
29-Jun-18	02-Jul-18	0.4399	1.00003616
02-Jul-18	03-Jul-18	0.4531	1.00001241
03-Jul-18	04-Jul-18	0.4543	1.00001245
04-Jul-18	05-Jul-18	0.4546	1.00001245
05-Jul-18	06-Jul-18	0.4563	1.00001250
06-Jul-18	09-Jul-18	0.458	1.00003764
09-Jul-18	10-Jul-18	0.4567	1.00001251
10-Jul-18	11-Jul-18	0.4549	1.00001246
11-Jul-18	12-Jul-18	0.4544	1.00001245
12-Jul-18	13-Jul-18	0.4563	1.00001250
13-Jul-18	16-Jul-18	0.4565	1.00003752
16-Jul-18	17-Jul-18	0.4552	1.00001247
17-Jul-18	18-Jul-18	0.4541	1.00001244
18-Jul-18	19-Jul-18	0.4543	1.00001245
19-Jul-18	20-Jul-18	0.4538	1.00001243
20-Jul-18	23-Jul-18	0.4557	1.00003745
23-Jul-18	24-Jul-18	0.4537	1.00001243
24-Jul-18	25-Jul-18	0.4548	1.00001246
25-Jul-18	26-Jul-18	0.454	1.00001244
26-Jul-18	27-Jul-18	0.4532	1.00001242
27-Jul-18	30-Jul-18	0.4532	1.00003725
30-Jul-18	31-Jul-18	0.4523	1.00001239
31-Jul-18	01-Aug-18	0.4503	1.00001234
01-Aug-18	02-Aug-18	0.4522	1.00001239

Π_i Term	**1.000521198**
Annualized(subtract 1 multiply by 365/42)	**0.452946%**
Rounded to Nearest 1/100 BP:	**0.4529%**
Contract Settlement:	**99.5471**

CME Group

CME GROUP HEADQUARTERS

20 South Wacker Drive
Chicago, Illinois 60606
cmegroup.com

CME GROUP GLOBAL OFFICES

Chicago +1 312 930 1000	**New York** +1 212 299 2000	**London** +44 20 3379 3700
Singapore +65 6593 5555	**Bangalore** +91 80 3323 2300	**Beijing** +86 10 5913 1300
Belfast +44 28 9089 6600	**Calgary** +1 403 444 6876	**Hong Kong** +852 2582 2200
Houston +1 713 658 2347	**São Paulo** +55 11 2787 6279	**Seoul** +82 2 6336 6700
Sydney +61 2 8051 3210	**Tokyo** +81 3 3242 6233	**Washington D.C.** +1 202 638 3838

PM2415/0918