Public consultation by the working group on euro risk-free rates

On Swaptions impacted by the CCP discounting transition from EONIA to the €STR

13 March 2020

Contents

1 Executive summary

The CCP discounting switch from EONIA to the €STR, planned for June 2020, will raise specific issues for swaption products. If the exercise date of these contracts is after the CCP transition date, their valuation may change as a result of the discounting switch from EONIA to the €STR. However, the CCP compensation mechanism will not apply to them because the contracts are bilateral, not cleared, on the transition date.

This consultation from the working group on euro risk-free rates (‘’the working group’’) is seeking feedback as to whether it should issue recommendations regarding the voluntary exchange (or lack thereof) of a cash compensation between bilateral counterparties to such swaption contracts.

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This consultation paper discusses a variety of options to address the swaptions impacted by the CCP discounting transition from EONIA to €STR. Each recipient of this paper is responsible for making its own assessment as to the suitability of the various options discussed herein. Recipients must continue to operate in an independent and competitive manner and they shall not use the content of this paper to coordinate their activities in breach of applicable law.

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2 Consultation overview

2.1 Background

The working group on euro risk-free rates – which recommended replacing the euro overnight index average (EONIA) with the new risk-free rate, the euro short-term rate (€STR) – is assisting the market in the smooth transition from EONIA[1] to the €STR.

To date, the working group has issued various recommendations for this transition2 and has analysed its impact from different perspectives. The outcome of this analysis is detailed in several reports which include recommendations on how to smoothen the transition to the €STR before EONIA is discontinued on 3 January 2022.[3]

Recommendation no. 6 in the Report by the working group on euro risk-free rates on the impact of the transition from EONIA to the €STR on cash and derivatives products reads as follows: market participants are encouraged to transition the euro Cash Collateral Remuneration Rate (CRR) as defined within their bilateral Credit Support Annex (CSA) from EONIA to the €STR flat (although participants ultimately will need to make their own independent determination). The present value shift resulting from the 8.5 basis point fixed spread over the expected collateral posting will be calculated and exchanged as an upfront fee, to be agreed bilaterally. A change to the CRR results in a change of the discount curve applicable to the derivative portfolio, and the difference between the present values ("PV") of the portfolio under the two discounting regimes (EONIA vs €STR) has been recommended to be exchanged via a fee (cash compensation).

The derivative cashflows are typically discounted at the CRR of the netting set that the trade belongs to. In the case of swaptions with the "Collateralised Cash Price" cash settlement method applicable, discount factors are part of the settlement formula used to determine the amount to be paid or received on the settlement date. Swaptions, although traded bilaterally, are often settled in

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1 EONIA's administrator, the European Money Markets Institute (EMMI), modified its methodology on 2 October 2019 to index it on the €STR plus a historical fixed spread of 8.5 basis points. This recalibration allowed EONIA to be maintained for a transition period until its discontinuation on 3 January 2022. See references below.

2 Recommendations of the working group on euro risk-free rates on the transition path from EONIA to the €STR, March 2019.

3 Report by the working group on euro risk-free rates on the impact of the transition from EONIA to the €STR on cash and derivatives products, August 2019.

Report by the working group on euro risk-free rates on the risk management implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR, October 2019.

Report by the working group on euro risk-free rates on the financial accounting implications of the transition from EONIA to the €STR and the introduction of €STR-based fallbacks for EURIBOR, November 2019.

Recommendations of the working group on euro risk-free rates on the EONIA to €STR legal action plan, July 2019.

Report by the working group on euro risk-free rates on €STR-fallback arrangements, November 2019.

reference to a particular clearing house. The CRR under the CSA only governs the valuation of the position until expiry and upon expiry; therefore the settlement value of the swaption is related to the clearing house discount rate.

Between 19 and 22 June 2020[4], LCH, Eurex and CME plan:

- to update the PAI/PAA and discounting on all euro-denominated products from EONIA to €STR flat;
- to apply cash compensation payments for all accounts with a live euro-denominated position at the point of conversion (compensation mechanism).

The working group is aware of the implications of the discounting and PAI switch on bilateral contracts, which can result in either the physical delivery of a cleared interest rate swap or in a cash settlement, computed using the discount curve prevailing at a central counterparty ("CCP"). The most commonly used contracts are interest rate swaptions. If the exercise date of these contracts is after the CCP transition date, their valuation will change as a result of the discounting switch from EONIA to the €STR but the CCP compensation mechanism will not apply to them because (i) the swaption contracts are bilateral (not cleared) and (ii) a cleared underlying interest rate swaps will not exist on the transition date.

This consultation aims at gathering feedback from market participants as to whether the working group on euro risk-free rates should issue a recommendation regarding:

- the voluntary exchange (or lack thereof) of a cash compensation between bilateral counterparties to such legacy contracts;
- conventions for new contracts traded before the transition date.

While this consultation only focuses on euro-denominated contracts, a similar issue consultation is taking place for contracts denominated in US dollars, as LCH and CME set to transition discounting and PAI for cleared products from EFFR to SOFR. The working group on euro risk-free rates is working closely with the Alternative Risk-free Rate Committee (ARRC) and aligned the structure of its consultation on the one from the ARRC. Hence, the similarity of statements and questions is intentional to allow market participants to respond in a consistent way.

[4] LCH Circular No 4052, 27 September 2019.
Eurex Clearing Circular 096/2019, 23 October 2019.
CME announcement, 31 January 2020.

2.2 Background on swaption settlement conventions

If an interest rate swaption is physically settled, the two counterparties would enter into an interest rate swap upon exercise, with the fixed rate set to the strike of the swaption.

Two physical settlement methods exist:

- **Physical settlement:** Upon exercise, the two counterparties would enter into a bilateral interest rate swap.
- **Cleared physical settlement**: Upon exercise, the two counterparties would enter into a cleared interest rate swap.
    - The CCP to be used would either be specified in the confirmation as a mutually agreed clearing house or would be agreed to bilaterally at time of exercise.

Because of clearing mandates for interest rate swaps the “cleared physical settlement” convention has been used for the majority of physically-settled euro-denominated swaptions traded.

If a euro-denominated interest rate swaption is **cash settled**, the two counterparties would exchange a cash amount upon exercise, computed differently depending on the cash settlement method used:

- **Cash price:** an amount determined with respect to the underlying interest rate swap in accordance with the early termination provisions of the ISDA Master Agreement.
- **Collateralised cash price:** an amount calculated as the present value of an annuity, equal to the difference between the amounts that would be payable by the fixed-rate payer under the underlying interest rate swap and the amounts that would be payable by such fixed-rate payer if the fixed rate were the settlement rate (under “Collateralised Cash Price” the settlement rate is the relevant ICE swap rate for euro-denominated interest rate swaptions).

If a mutually agreed clearing house is specified in the confirmation and the confirmation incorporates Supplement 58 to the 2006 ISDA Definitions[5], discounting is at a rate that would apply as if the underlying swap was cleared at such mutually agreed clearing house.

- If a mutually agreed clearing house is not specified in the confirmation, or if a mutually agreed clearing house is specified in the confirmation but Supplement 58 to the 2006 ISDA Definitions is

[5] Supplement 58 to the 2006 ISDA Definitions was published on November 21 2018 and amended the “Collateralised Cash Price” cash settlement method by linking the discount factors to those used by the mutually agreed clearing house (if a mutually agreed clearing house is specified in the Confirmation). Amendments to the 2006 ISDA Definitions do not apply retroactively. Therefore, such provisions will only apply to contracts where the trade date is on or after November 21, 2018, unless otherwise specified in the Confirmation.

not incorporated, discounting is calculated using the discount rate specified in the ISDA Collateral Cash Price Matrix, which for euro-denominated swaptions is currently specified as "EONIA".

- **Par yield curve unadjusted:** a similar calculation as per the "Collateralised Cash Price" cash settlement method, except that the discount rate is set as the settlement rate (which under "Par Yield Curve – Unadjusted" is the relevant ICE swap rate if "ISDA Source" is specified in the confirmation).

For euro-denominated interest rate swaptions "Par Yield Curve Unadjusted" was the market standard cash settlement method until 26 November 2018. On 26 November 2018 and thereafter, this market standard changed to "Collateralised Cash Price"[6].

Two of these five settlement methods are tied to the CCP discounting regime ("Cleared Physical Settlement" and "Collateralised Cash Price").

[6] See the "2006 ISDA Definitions Settlement Matrix for early Termination and Swaptions" dated 26th November 2018.

3 Legacy swaptions

Some market participants have expressed concerns related to the economic implications of the CCP discounting switch in June 2020 on the legacy swaptions which are either physically settled using "Cleared Physical Settlement" or cash settled using the "Collateralised Cash Price" method. They have asked for the CCP compensation mechanism to be expanded to such contracts. The reasons for this ask include:

- The fact that cleared interest rate swaps will be subject to the CCP compensation mechanism while bilateral swaptions with an exercise date after the discounting switch will not be subject to it introduces an economic slippage and basis risk for market participants using cleared swaps as a hedge for bilateral swaptions (or vice versa). The valuation adjustment and change in discounting risk of the bilateral swaption will not be offset by the cleared interest rate swaps.
- The fact that CCPs would need to switch the discount curve for cleared interest rate swaps and that they would provide valuation and risk compensation was not sufficiently accounted for by market participants until recently. Therefore, parties to impacted bilateral contracts such as interest rate swaptions may not have analysed or understood the potential implications of such a switch on their contracts when entering into them.

In considering this question, one needs to consider both the applicable legal construct for legacy contracts and the operational feasibility of extending the CCP compensation mechanism to bilateral contracts.

3.1 Legal considerations

The overwhelming majority of outstanding bilateral interest rate swaptions are subject to the 2006 ISDA definitions. The annexed ISDA memo explains how settlement of interest rate swaptions would occur under the 2006 ISDA Definitions. As explained by the memo, the provisions of the 2006 ISDA Definitions do not contemplate any adjustments or compensation related to a change in the relevant CCP discount curve prior to exercise of the swaption.

Any agreement to make adjustments or exchange compensation would be voluntary and must be bilaterally agreed between counterparties to the contract based on their own analysis and negotiation regarding the justifications for doing so. As a result, market participants will need to perform their own legal analysis to make adjustment or exchange compensation. Such an analysis would depend, among other things, on the settlement method used and on whether a mutually agreed clearing house is specified in the trade confirmation:

- "Cleared Physical Settlement":
    - If a mutually agreed clearing house is specified in the confirmation (or if counterparties can agree on a CCP at time of exercise), the 2006 ISDA definitions imply that the underlying interest rate swap will be cleared at that CCP. In this instance, the parties implicitly agreed to use the CCP terms prevailing at time of exercise.
    - If no mutually agreed clearing house is specified in the confirmation and counterparties cannot agree on a CCP at time of exercise, the settlement will switch to collateralised cash price cash settlement (see below).
- "Collateralised Cash Price" settlement:
    - If a mutually agreed clearing house is specified in the confirmation and the confirmation incorporates Supplement 58 to the 2006 ISDA Definitions, discounting is at a rate that would apply as if the underlying interest rate swap was cleared at such mutually agreed clearing house. In this instance, the parties implicitly agreed to use the CCP terms prevailing at time of exercise.
    - If a mutually agreed clearing house is not specified in the confirmation, or if a mutually agreed clearing house is specified in the confirmation but Supplement 58 to the 2006 ISDA Definitions is not incorporated, discounting is calculated using the discount rate specified in the ISDA Collateral Cash Price Matrix. This should not be impacted by the CCP discounting switch since the discount curve is not depending on a discounting curve used by a CCP.

For euro-denominated swaptions, the change in market practice to use collateralised cash price occurred after the publication of Supplement 58 (so the issue of pre-Supplement 58 collateralised cash price swaptions is likely to be mainly a US dollar swaptions issue).

In the light of the above, it is generally understood that any compensation exchange for interest rate swaptions impacted by the CCP discounting switch would need to be voluntary in nature and subject to bilateral negotiations.

A recommendation by the working group on euro risk-free rates would not change this legal construct described above since market participants that executed swaptions are under no obligation to exchange compensation related to the upcoming CCP discounting change described herein. It is important to understand that any agreement between counterparties to make adjustments or exchange compensation would be strictly voluntary. Some have highlighted the risk of adverse selection if the recommendation were for market participants to exchange compensation: market participants who would benefit from the discounting change could choose not to exchange compensation and they could not be compelled to do so. Market Participants are also encouraged to consider the potential implications of the high-level EU principle that prohibits unjust enrichment and the specific legal restitutionary provisions that might apply in other jurisdictions.

3.2 Operational considerations

From an operational standpoint, an exchange of compensation between the counterparties to a bilateral swaptions would require a mechanism:

1) to flag a swaption as being subject to compensation;

2) to compute the compensation amount;

3) to exchange the compensation.

To flag a swaption as being subject to compensation, discussions are underway with MarkitSERV to create a field in MarkitWire (electronic trade capture and confirmation platform) where counterparties could explicitly specify a discount curve to be used for the settlement of the swaption. If the discount curve specified differs from the prevailing discount curve at the CCP at time of exercise, counterparties exchange compensation (the compensation amount would be negotiated between the parties). Joint agreement between the counterparties to the bilateral swaption would be required to populate this field. This field would default to a null value for legacy swaptions.

Operationally, one proposed solution is for counterparties to exchange cash compensation for the EONIA to €STR discounting valuation difference at expiry. LCH have offered to provide tools to compute the difference in valuation between a swap discounted at EONIA and a swap discounted at €STR (Eurex confirmed that they may offer a similar service). The output of these tools would be indicative and it would be the responsibility of the bilateral counterparties to agree on a compensation amount to be exchanged. The counterparties could also agree to exchange risk for the discounting change, if desired.

For swaptions where cleared physical settlement applies, LCH also offered to facilitate the exchange of compensation as a fee attached to the cleared underlying interest rate swap. However, for cash-settled swaptions, which do not involve the clearing of a physical swap, the swaption counterparties would need to exchange the compensation bilaterally, presumably by adjusting the cash settlement amount.

As an alternative to exchanging compensation at the expiry of each individual swaption, counterparties could agree to exchange compensation as a one-time, portfolio-level amendment prior to expiry. This single-step approach would have the benefit of reducing the operational burden associated with agreeing on a compensation amount and exchanging it, especially for portfolios with many line items and/or swaptions with very long expiries. Because the valuation adjustment would reflect the value of the swaptions prior to expiry, the tools that LCH have offered to provide may not be sufficient.

Regarding new swaptions, ISDA has provided draft amendments to the 2006 ISDA definitions aimed at providing such clarity for swaptions entered into on or after these amendments take effect (see draft in annexes).

3.3 Market implications

The discount curve used for the settlement of the swaption will trigger hedging needs and by extension trading of derivatives referencing that curve. The greater the population of swaptions that will settle by using €STR discounting, the more liquidity will be generated in €STR derivatives, including prior to the CCP discounting switch date.

4 Consultation Questions

Question 1

In the light of the considerations discussed in Chapter 3 and as it relates to legacy swaptions specifically, do you support:

a) the working group on euro risk-free rates recommending that voluntary compensation should be exchanged;

b) the working group on euro risk-free rates recommending that voluntary compensation should not be exchanged;

c) the working group on euro risk-free rates not issuing a recommendation regarding voluntary compensation.

Please explain.

Question 2

If the working group on euro risk-free rates recommended that voluntary compensation should be exchanged for legacy swaptions, would you support:

a) the working group on euro risk-free rates recommending that the compensation exchange apply to the entire relationship's portfolio but be calculated at the trade-level and at time of each swaption's expiry;

b) the working group on euro risk-free rates recommending that the compensation exchange take place at a pre-agreed date prior to 22 June 2020, with compensation exchange for each swaption at expiry acting as a backstop;

c) the working group on euro risk-free rates not issuing a recommendation regarding the timing of the compensation exchange.

Please explain.

Question 3

If the working group on euro risk-free rates recommended that voluntary compensation should be exchanged for legacy swaptions, would you support:

a) the working group on euro risk-free rates recommending that this only apply to swaptions traded prior to the date on which the working group on euro risk-free rates issues its recommendation (beginning of Q2 2020);

b) the working group on euro risk-free rates recommending that this only apply to swaptions traded prior to the effective date of the incoming ISDA amendments;

c) the working group on euro risk-free rates recommending that this only apply to swaptions traded prior to the CCP announcements regarding their plans for the discounting switch and compensation mechanism (from September 2019 to January 2020);

d) the working group on euro risk-free rates recommending that this only apply to swaptions traded before the date on which the CCP will switch their discount rate from EONIA to the €STR (from 19 to 22 June 2020);

e) the working group on euro risk-free rates not issuing a recommendation regarding a cut-off trade date after which compensation would no longer be recommended.

Please explain.

NB: If you selected C, which announcement date would you support for a given CCP, recognising that LCH, Eurex and CME released their final plans on different dates[7] and each of them also released preliminary plans prior to that?

[7] 27 September 2019 for LCH: LCH Circular No 4052
23 October 2019 for Eurex: Eurex Clearing Circular 096/2019
31 January 2020 for CME Group: CME announcement

5 Response procedures/next steps

Responses to this consultation should be sent to EuroRFR@ecb.europa.eu by 17:00 CET on 3 April 2020. Please coordinate internally and provide only one response per institution. Please attach your responses and clearly indicate “Consultation Response” in the subject line of your email. The European Commission and the European Central Bank will evaluate all the responses and prepare an anonymised summary of the feedback. This summary will be published on the ECB’s website and considered by the working group at its meeting on 21 April 2020.

The anonymised summary of the feedback from all market participants will be evaluated and the working group will evaluate whether recommendations can be derived from the results.

6 Annexes – Draft documents from ISDA

OUTLINE OF (I) THE SETTLEMENT OF CERTAIN SWAPTIONS AND (II) THE ISSUES WHICH ARISE FROM THE PROPOSED ADJUSTMENT TO DISCOUNTING BY CERTAIN CLEARINGHOUSES

Potential Supplement to the 2006 ISDA Definitions to enable parties to specify an Agreed Discount Rate in their Confirmation.

ISDA Collateral Cash Price Matrix

International Swaps and Derivatives Association, Inc.

OUTLINE OF (I) THE SETTLEMENT OF CERTAIN SWAPTIONS AND (II) THE ISSUES WHICH ARISE FROM THE PROPOSED ADJUSTMENT TO DISCOUNTING BY CERTAIN CLEARINGHOUSES

published on [●], March 2020
by the International Swaps and Derivatives Association, Inc.

1 Introduction

The settlement of a swaption is not, and the determination of the amounts payable or the obligations to be fulfilled upon settlement of a swaption is not, straightforward. This note is intended to provide a summary of what will be payable upon settlement of a swaption. It is not intended to describe the operational process of how a swaption should be exercised.

This note summarises the position under the 2006 ISDA Definitions, as published by ISDA and as have been supplemented from time to time (the "**2006 Definitions**").[1] References in this note to "Sections" are to sections of the 2006 Definitions. It has been assumed that all relevant supplements to the 2006 Definitions have been incorporated into the confirmation of the relevant swaption (the "**Confirmation**"). This note also summarises how the conclusions would differ if not all of the supplements to the 2006 Definitions have been incorporated into the Confirmation.

The content of this note is not to be relied upon as legal advice and members should seek legal, tax and accounting advice and consult with any other adviser they deem appropriate as to the matters discussed herein.

The documentation of each individual swaption remains the responsibility of the parties concerned. Each party must satisfy itself as to any possible adverse consequences (including in relation to the potential transfer of economic value) which may occur as a result of any amendment to a swaption or an adjustment to a discount rate by a clearinghouse. Any such consequences should be considered in the light of the potential outcome if such amendment or adjustment were not to apply to that swaption.

2 Cash Settlement

2.1 Payment of the Cash Settlement Amount

Swaptions may either be cash settled or physically settled.

1 A number of supplements to the 2006 Definitions are relevant in the context of swaptions. They include (i) supplement 28 published on 30 September 2011 ("**Supplement 28**"), (ii) supplement 48 published on 23 March 2016 ("**Supplement 48**") and (iii) supplement 58 published on 21 November 2018 ("**Supplement 58**").

Where cash settlement applies, following the exercise of a swaption, if the buyer of the swaption is in-the-money, the seller of the swaption will pay to the buyer the Cash Settlement Amount on a specified date (referred to as the "Cash Settlement Payment Date").[2]

The Cash Settlement Amount[3] will be:

2.1.1 the amount agreed between the parties; or

2.1.2 if there is no such agreement:

(i) the amount determined in accordance with the elections made by the ISDA Settlement Matrix[4] (which provides for, amongst other things, the default Cash Settlement Method that will apply to a swaption); or

(ii) if the ISDA Settlement Matrix does not apply, an amount determined in accordance with the Cash Settlement Method specified in the Confirmation.[5]

2.2 Examples of determining the Cash Settlement Amount

This paragraph is not intended to be an exhaustive list of the currencies which may be relevant to swaptions or of how the parties to a swaption may have specified that any Cash Settlement Amount is to be calculated.

2.2.1 Swaptions denominated in US Dollars or Euros

Unless the parties to a swaption override the ISDA Settlement Matrix, for swaptions denominated in US Dollars or Euros and entered into on or after 21 November 2018 (i.e. post-publication of Supplement 58), the Cash Settlement Method will be "Collateralized Cash Price".[6]

Collateralized Cash Price is defined in Section 18.3(g). In summary, it is the present value of an annuity equal to the difference between (a) the amounts that would be payable by the Fixed Rate Payer pursuant to the underlying swap if the Fixed Rate were the "Settlement Rate" and (b) the amounts payable by the Fixed Rate Payer pursuant to the underlying swap set out in the Confirmation.

(i) **Determining the Settlement Rate**

In addition to the ISDA Settlement Matrix, ISDA has published the ISDA Collateral Cash Price Matrix. Unless the parties to a swaption override the ISDA Collateral Cash Price Matrix, the Settlement Rate will be "ISDA Source".[7] This is defined as the par swap rate for swaps in the currency in

[2] Section 18.1.

[3] Defined in Section 18.2(a).

[4] Section 19.1 contemplates that the default elections specified in the ISDA Settlement Matrix will apply unless specified otherwise. Parties to a swaption are free to override the ISDA Settlement Matrix and specify a Cash Settlement Method in the Confirmation (section 18.2(l)).

[5] A list of possible Cash Settlement Methods is set out in Section 18.3.

[6] We understand that "Collateralized Cash Price" was used as the Cash Settlement Method for some cash settled swaptions prior to the November 2018 update of the Cash Settlement Matrix.

[7] The ISDA Collateral Cash Price Matrix is applied pursuant to Section 18.3(g)(ii) and Section 19.1.

which the underlying swap is denominated (for current purposes this will be US Dollars or Euros) for a period equivalent to the remaining term of the underlying swap. The rate is determined by reference to the rate which appears on the relevant ICESWAP screen page.[8]

(ii) **Determining present value**

(a) **Swaptions entered into pre-Supplement 58**: In respect of swaptions entered into prior to the publication of Supplement 58, the parties must determine the present value using the discount rate specified in the ISDA Collateral Cash Price Matrix, which for swaptions denominated in US Dollars is OIS (sourced from Reuters Screen FEDFUNDS1 Page) and for swaptions denominated in Euros is EONIA.

(b) **Swaptions entered into post-Supplement 58**: Unless otherwise agreed by the parties to the swaption, the discount curve to be used to determine a present value will depend on whether they have specified "Mutually Agreed Clearinghouse" in the Confirmation.

If Mutually Agreed Clearinghouse applies, the parties must use the discount rate that would apply if the underlying swap were cleared through the nominated clearinghouse.

If Mutually Agreed Clearinghouse does not apply, the parties must use the discount rate specified in the ISDA Collateral Cash Price Matrix, which for swaptions denominated in US Dollars is OIS (sourced from Reuters Screen FEDFUNDS1 Page) and for swaptions denominated in Euros is EONIA.

(iii) **Adjustments**

In respect of swaptions entered into post-Supplement 48[9], if Mutually Agreed Clearinghouse applies, the Settlement Rate can be adjusted. In summary, the purpose of the adjustment would be to replace the Settlement Rate specified in the Confirmation (or the ISDA Collateral Cash Price Matrix) with the rate that would be payable for a corresponding swap as if it were cleared in the relevant clearinghouse.

2.2.2 Swaptions denominated in pounds sterling

Unless the parties to a swaption override the ISDA Settlement Matrix, for swaptions denominated in pounds sterling, the Cash Settlement Method will be "Par Yield Curve – Unadjusted".

Par Yield Curve – Unadjusted is defined in a similar way to Collateralized Cash Price. However, the discount curve for determining the present value will be equal

[8] Previously ISDAFIX Page.

[9] Or swaptions entered into pre-Supplement 48 that have been amended to incorporate Supplement 48. Market participants should refer to the agreements documenting each swaption (including any amendment agreements) to determine which supplement(s) have been incorporated into such swaption.

to the Settlement Rate (which is specified as the ICE Swap Rate for swaptions denominated in pounds sterling in the ISDA Settlement Matrix).

3 Physical Settlement and Cleared Physical Settlement

Where "Physical Settlement" applies, following the exercise of a swaption, the underlying swap transaction will be entered into between the seller of the swaption and the buyer.[10]

There is an additional concept of "Cleared Physical Settlement", which was introduced by Supplement 28. In this case, if the swaption is exercised, the underlying swap transaction will be entered into and cleared through a clearinghouse.[11] The clearinghouse will either be specified in the Confirmation as the "Mutually Agreed Clearinghouse" (post-Supplement 48 only[12]) or agreed upon between the parties at the time of the exercise of the swaption (pre- or post-Supplement 48).

If (i) the parties are unable to agree on a clearinghouse for the underlying swap transaction at the time of exercise or (ii) (post-Supplement 48 only[13]) the agreed clearinghouse no longer accepts for clearing swaps with the terms of the underlying swap transaction, the swaption will terminate. Alternatively, if the underlying swap transaction fails to clear through the Mutually Agreed Clearinghouse and the parties to the swaption have not entered into any agreement relating to clearing, the underlying swap transaction will terminate. In either case, the amount payable will be an amount calculated by using the "Collateralized Cash Price" Cash Settlement Method.

4 Clearinghouses and changes to discounting

4.1 Consequence of discounting change

Some clearinghouses have announced an intention to transition price alignment and discounting for certain cleared transactions from the daily effective federal funds rate to SOFR (we refer to the relevant rate as the "discount rate").[14] Similar announcements have been made in respect of a transition from EONIA to €STR.[15]

If, following the effective date of a swaption but prior to the exercise date of the swaption, a related clearinghouse changes its discount rate, this may have an impact on the value of the swaption. If the swaption is cleared, the adjustment to the discount rate will alter the terms of any collateral arrangements required by the relevant clearinghouse, which will in turn affect the value of the swaption.

[10] Section 15.1.

[11] Section 15.2.

[12] Or swaptions entered into pre-Supplement 48 that have been amended to incorporate Supplement 48.

[13] Or swaptions entered into pre-Supplement 48 that have been amended to incorporate Supplement 48.

[14] For example, see the announcements by (i) the CME Group at https://www.cmegroup.com/education/articles-and-reports/sofr-price-alignment-and-discounting-proposal.html and (ii) LCH at https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwiK4ufJ_bHlAhVAUBUIHZ8LCOcQFjAAegQIARAC&url=https%3A%2F%2Fwww.cftc.gov%2Fmedia%2F2421%2FMRAC_LCHSOFRDiscountingLetter090919%2Fdownload&usg=AOvVaw2oOH6Dv4clVgCMt-Rv4Lg9.

[15] For example, see the announcement by LCH at https://www.lch.com/membership/ltd-membership/ltd-member-updates/transition-eustr-discounting-swapclear.

Possible scenarios based on the relevant Supplement(s) that apply to the swaption are discussed below.

4.1.1 Uncleared cash settled swaptions:

(i) **Swaptions entered into post-Supplement 58**: Where the Cash Settlement Amount is determined using the "Collateralized Cash Price" Cash Settlement Method, the adjustment to the discount rate may affect the Cash Settlement Amount that will be payable at the time of exercise. As discussed in paragraph 2.2.1(ii) above, where "Mutually Agreed Clearinghouse" is specified in the Confirmation, the present value calculation will reference the prevailing discount rate of a clearinghouse.

(ii) **Swaptions entered into pre-Supplement 58**: Where the Cash Settlement Amount is determined using the "Collateralized Cash Price" Cash Settlement Method, the change to the discount rate by the clearinghouse will have no impact on the Cash Settlement Amount that will be payable at the time of exercise. As discussed in paragraph 2.2.1(ii)(a) above, the present value calculation will be determined by reference to the discount rate set out in the ISDA Collateral Cash Price Matrix (i.e. EONIA for Euro swaptions and OIS (sourced from Reuters Screen FEDFUNDS1 Page) for US Dollar swaptions).

(iii) Where the Cash Settlement Amount is determined using a cash settlement method other than Collateralized Cash Price, one would generally expect the valuation of the swaption to be unaffected.

4.1.2 Uncleared physically settled swaptions:

(i) **Swaptions entered into pre-Supplement 28**: These swaptions cannot apply Cleared Physical Settlement. As the underlying swap transaction is not intended to be cleared, one would generally expect the valuation of the swaption to be unaffected.

(ii) **Swaptions entered into post-Supplement 28 and pre-Supplement 48**:[16]

(a) Where Cleared Physical Settlement does not apply, the underlying swap transaction is not intended to be cleared and one would generally expect the valuation of the swaption to be unaffected.

(b) Where Cleared Physical Settlement applies, the underlying swap transaction is intended to be cleared through a clearinghouse. Mutually Agreed Clearinghouse as a concept was not included at this time and the parties have to agree to the relevant clearinghouse at the time of exercise of the swaption.[17] If the parties cannot agree on

[16] For the avoidance of doubt, excluding swaptions that have been amended to incorporate Supplement 48.

[17] Section 15.2 (as inserted by Supplement number 28) reads as follows (emphasis added):

a clearinghouse in the relevant notice of exercise, the parties agree that Cash Settlement shall apply to the swaption and the Cash Settlement Amount will be an amount calculated by using the "Collateralized Cash Price" Cash Settlement Method.

If there is no available clearinghouse (because no clearinghouse house discounts at the same rate as that specified in the ISDA Collateral Cash Price Matrix), then it is strictly not possible for the parties to agree on a clearinghouse within the meaning of Section 15.2. Consequently, the final paragraph of Section 15.2 will apply. This provides for cash settlement of the swaption using Collateralized Cash Price, which itself uses the Discount Rate in the ISDA Collateral Cash Price Matrix (i.e. EONIA for Euro swaptions and FedFunds for US Dollar swaptions). One would generally expect the valuation of these swaptions to be unaffected by the change of the clearinghouse's discount rate.

(iii) **Swaptions entered into post-Supplement 48**:[18] Supplement 48 introduced the concept of Mutually Agreed Clearinghouse. This allowed parties to a swaption to agree upon a clearinghouse at the trade date, rather than having to agree at the time the swaption is exercised. If parties did not specify a Mutually Agreed Clearinghouse in the Confirmation, they are to agree upon the clearinghouse at the time of exercise of the swaption.[19]

Section 15.2 provides that if a Mutually Agreed Clearinghouse has <u>not</u> been specified in the Confirmation, the parties must agree upon a clearinghouse that pays interest on cash collateral at the Discount Rate in the Collateral Cash Price Matrix applies. Consequently, if a Mutually Agreed Clearinghouse has not been specified in the Confirmation, the position is as under Supplement 28 (pre-Supplement 48), as described in sub-paragraph (ii)(b) above.

"*If "Cleared Physical Settlement" is specified in the related Confirmation … ; provided, however that the Relevant Swap Transaction is cleared through* ***<u>a mutually agreed upon clearinghouse, agreed by both parties that accepts cash denominated in the same currency as the Relevant Swap Transaction as Eligible Collateral for margining purposes and pays interest on that cash at the Discount Rate specified in the ISDA Collateral Cash Price Matrix</u>***."

18 For the avoidance of doubt, including swaptions entered into pre-Supplement 48 that have been amended to incorporate Supplement 48.

19 Section 15.2 (as amended by Supplement number 48) reads as follows (emphasis added):

If "Cleared Physical Settlement" is specified in the related Confirmation for a Swaption, […] <u>provided, however that the Relevant Swap Transaction is cleared</u> ***through the Mutually Agreed Clearinghouse <u>or, if Mutually Agreed Clearinghouse is not specified in the related Confirmation, a mutually agreed upon clearinghouse, agreed by both parties in the relevant notice of exercise, that accepts cash denominated in the same currency as the Relevant Swap Transaction as Eligible Collateral for margining purposes, and pays interest on that cash at the Discount Rate specified in the ISDA Collateral Cash Price Matrix. […]</u>***

<u>If the parties have not specified a Mutually Agreed Clearinghouse in the related Confirmation and cannot agree on a clearinghouse in the relevant notice of exercise,</u> <u>the parties agree that Cash Settlement shall apply to the Swaption</u> and the Cash Settlement Amount will be an amount calculated by using the "Collateralized Cash Price" Cash Settlement Method.[…]"

If a Mutually Agreed Clearinghouse has been specified upfront, the underlying swap is cleared through that Mutually Agreed Clearinghouse. The adjustment to the discount rate of such Mutually Agreed Clearinghouse will alter the terms of any collateral arrangements required by the relevant clearinghouse in relation to that underlying swap transaction. This will result in a mismatch between (a) the price the parties attributed to the underlying swap when the swaption was entered into and (b) the price determined in accordance with the clearinghouse's discount curve at the time of settlement.

Where Cleared Physical Settlement applies but the underlying swap transaction is not cleared (as described in paragraph 3 above), there will be a fallback to cash settlement with the Cash Settlement Amount determined on the basis of the "Collateralized Cash Price" Cash Settlement Method.

(a) **Swaptions entered into pre-Supplement 58**: The Cash Settlement Amount will be determined using the Discount Rate specified in the ISDA Collateral Cash Price Matrix and accordingly one would generally expect the valuation of these swaptions to be unaffected by the change to the discount rate of the clearinghouse (see paragraph 2.2.1(ii)(a) above).

(b) **Swaptions entered into post-Supplement 58**: As discussed in paragraph 2.2.1(ii)(b) above:

(I) if "Mutually Agreed Clearinghouse" is specified in the Confirmation, the present value calculation will reference the prevailing discount rate of a clearinghouse. The change to the discount rate of the clearinghouse may affect the valuation of the swaption, as compared to the value attributed to it at the time of entry into of the swaption; and

(II) if "Mutually Agreed Clearinghouse" is not specified in the Confirmation, the present value calculation will be determined using the Discount Rate in the ISDA Collateral Cash Price Matrix. One would generally expect the valuation of these swaptions to therefore be unaffected by the change of the clearinghouse's discount rate.

4.2 Possible solutions

No provisions in the 2006 Definitions expressly contemplate the consequences described in paragraph 4.1 above. For completeness, we note that, for cash settled swaptions where the Cash Settlement Amount is determined using the "Collateralized Cash Price" Cash Settlement Method, there is a concept of an "Adjustment Amount" in the definition of Collateralized Cash Price. However, this provision is designed to adjust the Settlement Rate, rather than the discount rate used to determine a present value.

In the context of clearinghouses transitioning price alignment and discounting from (i) the daily effective federal funds rate to SOFR and (ii) EONIA to €STR, certain clearinghouses have announced an intention that, to the extent a swap transaction is directly cleared with that clearinghouse at the time, cash payments will be made or additional basis swaps will be entered into to neutralise the value transfer that would otherwise occur as a result of the change to the discount rate used by such clearinghouse.[20]

The provision of compensation for transactions which are already cleared does not resolve the concern for uncleared swaptions which have an exercise date falling after the clearinghouse's transition date. Again, at least one clearinghouse has announced an intention to facilitate a compensation mechanism for parties to uncleared swaptions.[21]

How any such compensation is (i) calculated, (ii) agreed to by the parties to any affected transaction and (iii) paid or delivered, will be a question for each clearinghouse to discuss with its members.

If a compensation mechanism for uncleared physically settled swaptions is established by a clearing house and set out in the rules of that clearinghouse, this would only apply to swaptions where the underlying swap is subsequently cleared through that clearinghouse. This mechanism could be used as a guide for any eventual compensation payment in respect of the cash settled swaptions considered in paragraph 4.1.1(i) above, however any such compensation payment would need to be agreed bilaterally between the parties to the swaption and the mechanism established by the clearinghouse would not bind either party.

ISDA is contemplating the following possible solution in respect of new transactions.

4.2.1 Update to the ISDA Collateral Cash Price Matrix:

ISDA could update and bifurcate the ISDA Collateral Cash Price Matrix to provide for:

(i) the discount rate that would apply to all swaptions having an Expiration Date prior to the relevant date proposed by the clearinghouse for transition to discounting using the RFR (the "**CCP Transition Date**")[22]. For EUR transactions this would be EONIA and for USD transactions this would be FedFunds; and

(ii) the discount rate that would apply to all swaptions having an Expiration Date on or after the CCP Transition Date. For EUR transactions this would be €STR and for USD transactions this would be SOFR.

As a result of this bifurcation, new swaptions entered into after the date of publication of the updated ISDA Collateral Cash Price Matrix with an Expiration Date after the CCP Transition Date would use the relevant clearinghouse discount

[20] See links in footnotes 10 and 11 above.

[21] See the announcements by (i) the CME Group at https://www.cmegroup.com/education/articles-and-reports/sofr-price-alignment-and-discounting-proposal.html

[22] CME and LCH have announced a transition date of 16 October 2020 for USD transactions for the change from the daily effective federal funds rate to SOFR discounting, with SOFR applying for discounting/PAI from the business day following 16 October 2010. LCH has also announced a transition date of 22 June 2020 for EUR denominated transactions for the change from EONIA to €STR discounting

rate for discounting. Any swaptions with an Expiration Date on or prior to the CCP Transition Date would continue to use EONIA or FedFunds for discounting.

This would address those transactions described in paragraphs 4.1.1(i) and 4.1.2(iii)(b)(I) above that are entered into after the publication of the updated ISDA Collateral Cash Price Matrix.

4.2.2 Supplement to provide for an upfront discount rate

ISDA could publish a supplement to the 2006 Definitions providing for parties to specify an "Agreed Discount Rate" upfront. If parties specify a Mutually Agreed Clearinghouse and an Agreed Discount Rate, and as at the exercise date of the swaption the discount rate of the Mutually Agreed Clearinghouse differs from the Agreed Discount Rate, the parties would either (i) agree upon the compensation amount payable to reflect the difference in discount rate, or (ii) cash settle the swaption in accordance with the Collateralized Cash Price Cash Settlement Method using the agreed discount rate to calculate the Cash Settlement Amount.

This would address those transactions described in paragraph 4.1.2(iii) (i.e. swaptions that apply Cleared Physical Settlement and specify a Mutually Agreed Clearinghouse in the Confirmation).

5 Consequences of novation

If an uncleared swaption is novated, the new transaction would typically have identical terms to the old transaction, which would include applying the same version of the 2006 Definitions. However, the outcome will depend on the novation agreement entered into between the transferee and the remaining party and what this says as to the incorporation of the 2006 Definitions and its supplements with respect to the new transaction. For example: (i) did the transferee and the remaining party sign a new confirmation that specifically incorporates the 2006 Definitions as at the novation date, (ii) did they use the old confirmation which specifically incorporates the 2006 Definitions as at the trade date of the original transaction or (iii) did they sign a document that is silent on the incorporation of the 2006 Definitions?

Assuming the parties provided in their novation agreement that the new transaction is to have identical terms as the old transaction (as per the 2002 ISDA Novation Agreement) and they do not override this by documenting a new confirmation that incorporates the 2006 Definitions as at the novation date, then the new transaction should incorporate the same version of the 2006 Definitions as the old transaction.

The conclusion will have to be assessed on a case by case basis, having regard to the terms of each relevant novation agreement.

Potential Supplement to the 2006 ISDA Definitions to enable parties to specify an Agreed Discount Rate in their Confirmation.

[*Amendment to Section 14.1(f)*]

14.1

(f) **Mutually Agreed Clearinghouse.** "Mutually Agreed Clearinghouse" means the clearinghouse specified as such in the Confirmation, or, if a Mutually Agreed Clearinghouse is not specified in the Confirmation, a mutually agreed upon clearinghouse, agreed by both parties at the time of exercise, that accepts cash denominated in the same currency as the Relevant Swap Transaction as eligible collateral for margining purposes.

[***Amendment to Section 15.2***]

15.2 Section 15.2. Cleared Physical Settlement.

(a) If "Cleared Physical Settlement" is specified in the related Confirmation for a Swaption, the Seller shall grant the Buyer, pursuant to the Swaption, the right to cause the Underlying Swap Transaction (which in the case of a Swaption forming part of a Swaption Straddle will be either an Underlying Payer Swap or an Underlying Receiver Swap) to become effective in accordance with Section 15.1 (Physical Settlement) and to be cleared through the Mutually Agreed Clearinghouse.

(b) If there is a Mutually Agreed Clearinghouse through which the Relevant Swap Transaction can be cleared, once the Relevant Swap Transaction has been submitted for clearing it shall be governed by the terms of any agreement related to clearing between the parties in accordance with its terms. For the avoidance of doubt, if there is a Mutually Agreed Clearinghouse, and the Relevant Swap Transaction is submitted for clearing and fails to clear, the terms of any agreement related to clearing between the parties shall apply.

(c) If the Relevant Swap Transaction fails to clear and the parties have not entered into any agreement relating to clearing, the Relevant Swap Transaction will terminate and be cash settled as of the Exercise Date and the amount payable on early termination will be an amount calculated by using the "Collateralized Cash Price" Cash Settlement Method.

(d) If as of the relevant Exercise Date, the Mutually Agreed Clearinghouse does not accept for clearing swaps with the terms of the Relevant Swap Transaction, then Cash Settlement shall apply to the Swaption and the Cash Settlement Amount will be an amount calculated by using the "Collateralized Cash Price" Cash Settlement Method.

(e) If the parties have not specified a Mutually Agreed Clearinghouse in the related Confirmation and cannot agree on a Mutually Agreed Clearinghouse at the time of exercise, Cash Settlement shall apply to the Swaption and the Cash Settlement Amount will be an amount calculated by using the "Collateralized Cash Price" Cash Settlement Method. For the avoidance of doubt, Section 18.3(g)(iii) shall not apply to Cash Settlement Amounts determined pursuant to this paragraph (e) of Section 15.2

(f) If a Mutually Agreed Clearinghouse and an Agreed Discount Rate has been specified in the Confirmation, and as at the time of exercise the interest rate benchmark used by the Mutually Agreed Clearinghouse to calculate payments of interest in respect of cash collateral denominated in the same currency as the Relevant Swap Transaction is not the same as the Agreed Discount

Rate, the compensation that shall be payable by one party to the other to reflect the difference between the Agreed Discount Rate and the interest rate benchmark used by the Mutually Agreed Clearinghouse to calculate payments on cash collateral denominated in the same currency as the Relevant Swap Transaction shall be the amount agreed between the parties. If they are unable to agree the amount of such compensation within four Business Days of the Exercise Date, Cash Settlement shall apply to the Swaption and the Cash Settlement Amount will be an amount calculated by using the "Collateralized Cash Price" Cash Settlement Method.

[***Amendment to Section 18.3(g)***]

18.3(g) Collateralized Cash Price.

(i) Subject to subparagraphs (iii) and (v) below, if "Collateralized Cash Price" applies, the Cash Settlement Amount will be an amount calculated as the present value of an annuity equal to the difference between:

(A) the amounts that would be payable by the Fixed Rate Payer under the Relevant Swap Transaction if the Fixed Rate were the Settlement Rate; and

(B) the amounts payable by the Fixed Rate Payer under the Relevant Swap Transaction.

(ii) The discount factors used to calculate such present value will be:

(A) if a Mutually Agreed Clearinghouse is specified in the Confirmation, subject to paragraph 18.3(g)(ii)(B) below, the discount factors that would apply to a valuation of the Relevant Swap Transaction if the Relevant Swap Transaction were cleared through the Mutually Agreed Clearinghouse;

(B) If either,

1. a Mutually Agreed Clearinghouse is not specified in the Confirmation; or

2. a Mutually Agreed Clearinghouse and an Agreed Discount Rate are specified in the Confirmation and as at the Cash Settlement Valuation Date the interest rate benchmark used by the Mutually Agreed Clearinghouse to calculate payments of interest in respect of cash collateral denominated in the same currency as the Relevant Swap Transaction is not the same as the Agreed Discount Rate,

calculated from a current zero coupon curve that is derived, as of the Cash Settlement Valuation Time on the Cash Settlement Valuation Date, from the interest rate benchmark used to calculate payments of interest in respect of cash collateral denominated in the same currency as the Relevant Swap Transaction, where the parties to the Relevant Swap Transaction are deemed to have a bilateral ISDA 2016 Credit Support Annex for Variation Margin (VM) (with the same governing law as the Agreement), with cash denominated in the same currency as the Relevant Swap Transaction as the only Eligible Collateral (VM) or Eligible Credit Support (VM), as applicable (each of the terms "Eligible Collateral (VM)" and "Eligible Credit Support (VM)" have the same meaning as set forth in such ISDA 2016 Credit Support Annex for Variation Margin), which interest rate benchmark shall be the Discount Rate; and

(iii) The Settlement Rate shall be:

(A) the Settlement Rate specified in the ISDA Collateral Cash Price Matrix with respect to the currency of the Relevant Swap Transaction; or

(B) if there is no such Settlement Rate, determined by the Calculation Agent in good faith and using commercially reasonable procedures.

(iii) If "Collateralized Cash Price" is specified in the related Confirmation to be the Cash Settlement Method applicable to a Swap Transaction to which Optional Early Termination or Mandatory Early Termination is applicable, and the Optional Early Termination Date or Mandatory Early Termination Date, as the case may be, falls on a date which is not both a Fixed Rate Payer Payment Date and a Floating Rate Payer Payment Date under that Swap Transaction, then the Cash Settlement Amount will be an amount equal to the Cash Settlement Amount determined pursuant to subparagraphs (i) and (ii) above in respect of the period from, and including, the next such date, together with an amount in respect of amounts accrued but in respect of which the originally scheduled Payment Date has not yet arisen as of the Optional Early Termination Date or Mandatory Early Termination Date, as the case may be.

(iv) If the parties are unable to agree on the Cash Settlement Amount, the Calculation Agent will request the Cash Settlement Reference Banks to provide a quotation using the Collateralized Cash Price methodology described above in this Section 18.3(g). If at least three quotations are provided, the Cash Settlement Amount will be the arithmetic mean of the quotations, eliminating the highest quotation (or, in the event of equality, one of the highest) and the lowest quotation (or, in the event of equality, one of the lowest). If fewer than three quotations are provided, the Cash Settlement Amount will be determined by the Calculation Agent in good faith and using the Collateralized Cash Price methodology described in this Section 18.3(g).

(v) For purposes of calculating the Cash Settlement Amount pursuant to subparagraph (i) above, if a Mutually Agreed Clearinghouse is specified in the Confirmation, then,

(A) if either party so elects, by giving notice to the other party prior to the Cash Settlement Valuation Time on the Cash Settlement Valuation Date, the Settlement Rate used to determine the amounts payable under subparagraph (i)(A) above shall be increased or decreased, as applicable, by the Adjustment Amount; and

(B) notwithstanding any provision to the contrary in subparagraph (v)(A) above, if the relevant process for the determination of the Adjustment Amount is the process set out in Section 14.1(g)(B) and if the Settlement Rate in respect of which the Adjustment Amount is being determined is itself required to be determined on the basis of quotes received by Cash Settlement Reference Banks pursuant to the provisions of Section 18.2(f)(iv), no separate quotations will be required to be provided by Cash Settlement Reference Banks in connection with the determination of the Adjustment Amount but the Cash Settlement Reference Banks shall instead be requested to factor into their quotations of the Settlement Rate the amount by which such Cash Settlement Reference Banks would adjust the relevant Settlement Rate determined pursuant to Section 18.2(f)(iv), if the Cash Settlement Valuation Date were the Trade Date of the Relevant Swap Transaction and such Relevant Swap Transaction were to be cleared through the relevant Mutually Agreed Clearinghouse.

***[New definitions to be added to Section 18.2 (Certain Definitions Relating to Cash Settlement)*]**

"**Agreed Discount Rate**" means the interest rate benchmark specified as such in the Confirmation.

"**Discount Rate**" means (i) if an Agreed Discount Rate is specified in the Confirmation, the interest rate benchmark specified as the Agreed Discount Rate, or (ii) if an Agreed Discount Rate is not specified in the

Confirmation, the Discount Rate specified in the ISDA Collateral Cash Price Matrix with respect to the currency of the Relevant Swap Transaction.

[*Amendment to Section 18.2(f)*]

Section 18.2(f)(i) of the 2006 ISDA Definitions is deleted in it entirely and replaced with the following:

(i) if "**ICESWAP Rate**" is specified, or deemed to have been specified, in the related Confirmation, the par swap rate for swaps in the currency in which the Relevant Swap Transaction is denominated for a period equivalent to the remaining Term of the Relevant Swap Transaction, as published by the ICESWAP Rate Administrator, as of the Cash Settlement Valuation Time on the Cash Settlement Valuation Date, where "**ICESWAP Rate Administrator**" means ICE Benchmark Administration, or any successor thereto as administrator of the ICE Swap Rates;

Section 18.2(f)(iii) of the 2006 ISDA Definitions is deleted in it entirely and replaced with the following:

(iii) if a par swap rate for swaps in the currency in which the Relevant Swap Transaction is denominated for a period equivalent to the remaining Term of the Relevant Swap Transaction is not published by the ICESWAP Rate Administrator (or an ICESWAP Rate is not available for such currency) (if "ICESWAP Rate" is specified or deemed to be specified) or in the relevant price source (if "Other Price Source" is specified) or if "Reference Banks" is specified in the related Confirmation, the rate will be determined on the basis of the par swap rates quoted by the Cash Settlement Reference Banks using the relevant Quotation Rate, as of the Cash Settlement Valuation Time on the Cash Settlement Valuation Date, for swaps in the currency in which the Relevant Swap Transaction is denominated for a period equivalent to the remaining Term of the Relevant Swap Transaction and with dealers in the relevant market of the highest credit standing which satisfy all the credit criteria which such Cash Settlement Reference Banks apply generally at the time in deciding whether to offer or make an extension of credit. If five quotations are provided as requested, the Settlement Rate will be calculated by eliminating the highest and lowest rates and taking the arithmetic mean of the remaining rates. If at least three, but fewer than five, quotations are provided, the Settlement Rate will be the arithmetic mean of the quotations. If fewer than three quotations are provided as requested, the Settlement Rate will be determined by the Calculation Agent.

[***Note to WG: the only change to this section is to replace references to "ISDAFIX" and "ISDA SOURCE" with references to "ICESWAP Rate" and "ICESWAP Rate Administrator".***]

ISDA Collateral Cash Price Matrix

Published [ ] Effective [ ]

This ISDA Collateral Cash Price Matrix is for use with Transactions documented under the 2006 ISDA Definitions and will apply (i) in respect of any Transaction that specifies "Collateralized Cash Price" as the Cash Settlement Method and (ii) for the purposes for Section 15.2 (*Cleared Physical Settlement*).

1	2	3	4
Currency	**Discount Rate for Swaptions with an Expiration Date[1] on or prior to the CCP Transition Date**	**Discount Rate for Swaptions with an Expiration Date[2] after the CCP Transition Date and for all other non-Swaption Transactions[3]**	**Settlement Rate**
AMERICAS			
USD	EFFR	SOFR	ICESWAP Rate
EUROPE, MIDDLE EAST AND AFRICA			
CHF	SARON	SARON	Reference Banks
DKK	DKK OIS	DKK OIS	Reference Banks
EUR	EONIA	€STR	ICESWAP Rate
GBP	SONIA	SONIA	ICESWAP Rate
SEK	SEK OIS	SEK OIS	Reference Banks
ASIA PACIFIC			
JPY	TONAR	TONAR	Reuters Screen 17143 Page

Each Discount Rate in this ISDA Collateral Cash Price Matrix shall be a "Relevant Benchmark" for the purposes of Section 6.2.1 of the 2006 ISDA Definitions Benchmarks Annex to the ISDA Benchmarks Supplement.

[1] For this purpose 'Expiration Date' is the date specified as such in the Confirmation without adjustment for non-Exercise Business Days.

[2] For this purpose 'Expiration Date' is the date specified as such in the Confirmation without adjustment for non-Exercise Business Days.

[3] **DRAFTING NOTE: Collateralized Cash Price may be used to cash settle transactions other than swaptions to which MET or OET applies. In this cash, the Discount Rate would be the rate in this column.**

The following terms as used in this Collateral Cash Price Matrix have the meanings given below. All other capitalised terms have the meanings given in the 2006 ISDA Definitions, as supplemented as at the effective date of this Collateral Cash Price Matrix.

"**CCP Transition Date**" means, in respect of a Transaction and the currency of denomination of that Transaction (the "Transaction Currency"), the last date on which a Global CCP applies the rate in column 2 in the table above (if such rate differs from the rate in column 3 in the table above) as the interest rate for cash collateral denominated in the Transaction Currency to Transactions cleared by such Global CCP.[4]

"**DKK OIS**" means, in respect of any day, a rate equal to the daily fixing for Danish Kroner tomorrow next deposits as published at approximately 11:00 a.m., Copenhagen time, on the day that is one Copenhagen Banking Day preceding that day on the Reuters Screen DKNA14 Page, under the heading "T/N Rente". If such rate does not appear on the Reuters Screen DKNA14 Page in respect of that day, the rate for that day will be as agreed between the parties, acting in good faith and in a commercially reasonable manner. If the parties cannot agree, the rate for that day will be the rate displayed on the Reuters Screen DKNA14 Page in respect of the first preceding Copenhagen Banking Day.

"**EFFR**" means, in respect of any day, the rate set forth in H. 15(519) for that day under the caption "EFFECT", as such rate is displayed on the Reuters Screen FEDFUNDS1 Page. If, by 5:00 p.m., New York City time, on the day that is one New York City Banking Day following such day, such rate does not appear on the Reuters Screen FEDFUNDS1 Page or is not yet published in H. 15(519), the rate for that day will be the rate set forth in H.I5 Daily Update, or such other recognized electronic source used for the purpose of displaying such rate, for that day opposite the caption "Federal funds (effective)". If, by 5:00 p.m., New York City time, on the day that is one New York City Banking Day following the relevant day, such rate does not appear on the Reuters Screen FEDFUNDS 1 Page or is not yet published in H.I5(519), H.I5 Daily Update or another recognized electronic source, the rate for that day will be the rate for the first preceding day for which such rate is set forth in H. 15(519) opposite the caption "Federal funds (effective)", as such rate is displayed on the Reuters Screen FEDFUNDS 1 Page.

"**EMMI Website**" means the website of the European Money Markets Institute at https://www.emmi-benchmarks.eu, or any Successor Source.

"**€STR**" means, in respect of any day, the level of the euro short term rate provided by the European Central Bank as administrator of the benchmark (or a successor administrator) on the ECB's Website in respect of that day, if that day is a Target Settlement Day, or in respect of the Target Settlement Day immediately preceding that day, if that day is not a Target Settlement Day.

"**EONIA**" means, in respect of any day, the level of the euro overnight index average provided by the European Money Markets Institute as administrator of the benchmark (or a successor administrator) on the EMMI Website in respect of that day, if that day is a Target Settlement Day, or in respect of the Target Settlement Day immediately preceding that day, if that day is not a Target Settlement Day.

"**Global CCP**" means, (i) in respect of Transactions denominated in USD, either of LCH SwapClear (forming part of the LCH Group) or CME Clearing (forming part of the CME Group), (ii) in respect of Transactions denominated in EUR, LCH SwapClear (forming part of the LCH Group, in each case including any successor thereto, and (iii) in respect of Transactions denominated in any other currency, a global central clearing counterparty that is regulated as such in its country of establishment and that provides clearing services in respect of OTC derivatives including interest rate swaps.

"**SARON**" means, in respect of any day, the rate for overnight repo transactions in Swiss Francs which appears on the Thomson Reuters Screen SARON.S under the heading 'CLSFIX' at or after 6:00 p.m., Zurich time, in

[4] This date is expected to be, in respect of Transactions denominated in USD, 16 October 2020, and in respect Transactions denominated in EUR, 19 June 2020.

respect of that day or, if such rate does not appear on the Thomson Reuters Screen SARON.S by 8 p.m. on such day, the rate for that day will be determined by the Calculation Agent.

"**SEK OIS**" means, for any day, the rate equal to the daily fixing for Swedish Krona tomorrow next deposits as published at approximately 11:00 a.m., Stockholm time, on the day that is one Stockholm Banking Day preceding that day on the Reuters Screen SIDE Page under the heading "Fixing". If such rate does not appear on the Reuters Screen SIDE Page in respect of the relevant day, the rate for that day will be as agreed between the parties, acting in good faith and in a commercially reasonable manner. If the parties cannot agree, the rate for that day will be the rate displayed on the Reuters Screen SIDE Page in respect of the first preceding Stockholm Banking Day.

"**SOFR**" means, in respect of any day, the daily Secured Overnight Financing Rate provided by the Federal Reserve Bank of New York, as the administrator of the benchmark (or a successor administrator) on the New York Fed's Website in respect of that day as published on or about 8:00 a.m., New York City time, on the U.S. Government Securities Business Day immediately following that day. If, by 5:00 p.m., New York City time, on the U.S. Government Securities Business Day immediately following the relevant day, the Secured Overnight Financing Rate in respect of such day has not been published and a SOFR Index Cessation Event has not occurred, then SOFR for that day will be the Secured Overnight Financing Rate as published in respect of the first preceding U.S. Government Securities Business Day for which the Secured Overnight Financing Rate was published on the New York Fed's Website.

"**SONIA**" means, for any day, the rate equal to the daily Sterling Overnight Index Average rate as provided by the administrator of SONIA to, and published by, authorized distributors of the rate as of 9:00 a.m., London time, on the London Banking Day immediately following that day.

"**TONAR**" means, for any day, the rate for the trade weighted average of the overnight unsecured call loan rate (rounded upward, if necessary, to the nearest 1/100th of 1%) which appears on the Reuters Screen TONAR Page under the heading "Tokyo Overnight Average Rates" on such day.