ARRC Consultation on Swaptions Impacted by the CCP Discounting Transition to SOFR

This Consultation seeks views on whether the ARRC should recommend a compensation methodology for swaptions referencing U.S. dollar LIBOR that could be affected by the discounting change for cleared derivatives from the effective federal funds rate ("EFFR") to the Secured Overnight Financing Rate ("SOFR") that is expected to occur on October 16, 2020. The ARRC welcomes responses to the consultation from the widest possible range of stakeholders, including but not limited to, cash and derivatives market participants.

Part I: ARRC Consultation Overview

A. Background

The Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York ("FRBNY") convened the Alternative Reference Rates Committee ("ARRC") in 2014 to identify alternative reference rates for U.S. dollar (USD) LIBOR ("LIBOR"), identify best practices for contract robustness in the interest rate market, and create an implementation plan to support an orderly adoption of new reference rates. After accomplishing its initial set of objectives by selecting an alternative reference rate (which is the Secured Overnight Financing Rate or "SOFR") and setting out a Paced Transition Plan with respect to derivatives, the ARRC was reconstituted in 2018 with an expanded membership to help ensure the successful implementation of the Paced Transition Plan and to serve as a forum for cash and derivatives market participants to address the risks of severe market disruption that could result from the cessation of LIBOR and develop and support liquidity in SOFR-based products across cash and derivatives markets.

Steps 4 and 5 of the original Paced Transition Plan called for Central Counterparty Clearing Houses ("CCPs") to:

4. Begin allowing market participants a choice between clearing new or modified swap contracts (swaps paying floating legs benchmarked to EFFR, LIBOR, and SOFR) into the current PAI/discounting environment or one that uses SOFR for PAI and discounting (anticipated completion: 2020Q1)
5. No longer accept new swap contracts for clearing with EFFR as PAI and discounting except for the purpose of closing out or reducing outstanding risk in legacy contracts that use EFFR as PAI and discount rate. Existing contracts using EFFR as PAI and the discount rate continue to exist in the same pool, but would roll off over time as they mature or are closed out (anticipated completion: 2021Q2)

In 2019, after extensive consultation with their users, LCH and CME announced plans that would replace the original steps 4 and 5 of the Paced Transition Plan with a plan to take the following actions effective at close of business on October 16, 2020:

(i) use SOFR for PAI/discounting of new swap contracts going forward (in place of EFFR); and

(ii) modify outstanding swap contracts to replace EFFR with SOFR for PAI/ discounting.

Under LCH's plan, the discounting and PAI for USD-denominated interest rate swaps and inflation swaps, as well as Mexican peso-denominated swaps and non-deliverable swaps in eight other currencies, will transition from the EFFR to SOFR at close of business on October 16, 2020. The transition will involve an exchange of a cash compensation (equal to the difference in valuation between the two discounting regimes) and of a risk compensation (in the form of at-market EFFR vs. SOFR basis swaps). Client accounts would be able to elect cash-only compensation (i.e. opt out of the risk compensation) with an auction being conducted to facilitate such an election.

Under CME's plan, the discounting and PAI for USD-denominated interest rate swaps will transition from EFFR to SOFR at close of business on October 16, 2020. The transition will involve an exchange of both cash and risk compensation. The risk compensation will be mandatory and CME intends to engage with third-party service provider(s) to conduct an auction for market participants wishing to liquidate their EFFR/SOFR basis swaps.

Both CCPs highlighted 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 CCP. The most commonly used such contracts are interest rate swaptions. If the exercise date of these contracts is after the date on which the relevant CCP makes the changes described above, their valuation will change as a result of the discounting switch from EFFR to SOFR. However, for contracts that contemplate physical delivery of a cleared interest rate swap, the CCP compensation mechanism will not apply to them because the physical delivery will not have occurred on that date.[1] The CCP compensation mechanism would never come into play for contracts that are to be cash settled.

This consultation seeks to gather feedback from market participants as to whether the ARRC 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 October 16, 2020 transition date

While this consultation is only focused on USD-denominated contracts, note that a similar issue exists in euro (EUR)-denominated contracts, with LCH, Eurex and CME set to transition discounting and PAI for cleared products from the Euro Overnight Index Average rate ("EONIA") to the Euro Short-Term Rate ("€STR") at close of business on June 19, 2020.

However, the EUR discounting switch presents a significant difference relative to the USD discounting switch. Since October 1, 2019, EONIA has been redefined as €STR + a fixed spread of 8.5bps. As a result, the sign and order of magnitude of the basis is known as of today in EUR unlike in USD, where the basis between EFFR and SOFR has a term structure and is subject to change.[2] Because of this difference, agreement between counterparties on a cash compensation amount in USD would require an agreement on the EFFR/SOFR basis curve and/or an agreement to exchange risk in the form of basis swaps.

[1] There was no compensation mechanism envisioned in the original Paced Transition Plan because legacy cleared contracts would have continued to be valued using an EFFR discount curve, but physical delivery of a new cleared swap or cash settlement computed using the discount curve prevailing at a CCP would have switched to SOFR.

[2] Note that, as of January 16, 2020, the market-implied basis between EFFR and SOFR is lower (in absolute value) than 8.5bps and its sign varies depending on the tenor of the basis swap.

B. Background on Swaption Settlement Conventions

If a USD 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 non-cleared 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 Mutually Agreed Clearinghouse or would be agreed to bilaterally between the counterparties at time of exercise

Because of clearing mandates for interest rate swaps, including but not limited to the CFTC mandate that took effect in 2013, the "Cleared Physical Settlement" convention has been used for the majority of physically-settled USD interest rate swaptions traded since then.

If a USD 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 swap in accordance with the early termination provisions of the ISDA Master Agreement
- **Collateralized 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 swap and the amounts that would be payable by such Fixed Rate Payer if the Fixed Rate were the Settlement Rate (under "Collateralized Cash Price" the Settlement Rate is the relevant ICE swap rate for USD swaptions)
  - If a Mutually Agreed Clearinghouse is specified in the Confirmation and the Confirmation incorporates Supplement 58 to the 2006 ISDA Definitions[3], discounting is at a rate that would apply as if the underlying swap was cleared at such Mutually Agreed Clearinghouse
  - If a Mutually Agreed Clearinghouse is not specified in the Confirmation, or if a Mutually Agreed Clearinghouse 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 (for USD swaptions the ISDA Collateral Cash Price Matrix specifies "OIS" sourced from the Reuters Screen Page "FEDFUNDS1" as the Discount Rate)
- **Par Yield Curve Unadjusted**: a similar calculation as per the "Collateralized 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)

[3] Supplement 58 to the 2006 ISDA Definitions was published November 21, 2018 and amended the "Collateralized Cash Price" cash settlement method by linking the discount factors to those used by the Mutually Agreed Clearinghouse (if a Mutually Agreed Clearinghouse 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.

Consistent with physical settlement methods, “Collateralized Cash Price” has been used instead of “Cash

Consistent with the physical settlement methods, “Collateralized Cash Price” has been used instead of “Cash Price” for the majority of swaptions traded since 2013. The use of “Par Yield Curve Unadjusted” has been fairly marginal in USD, while more common historically in EUR. Of these five settlement methods, two are tied to the CCP discounting regime (“Physical Cleared” and “Collateralized Cash Price”). These are the same two which have been market standard in USD since 2013.

<u>Part II: Legacy Swaptions</u>

As it relates to legacy interest rate swaptions that could be exercised after the date that CCPs make the changes described above, some market participants have expressed concerns about the potential economic implications of the CCP discounting switch and have asked for the CCP compensation mechanism to be expanded to such contracts. The reasons for the ask include:

- The fact that cleared interest rate swaps will be subject to the CCP compensation mechanism while swaptions with an exercise date after the discounting switch will not be subject to it introduces a 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 may not have been sufficiently accounted for by market participants until recently. Therefore, parties to impacted bilateral contracts such as interest rate swaptions may not have analyzed 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.

A. Legal Considerations

The overwhelming majority of outstanding bilateral interest rate swaptions are subject to the 2006 ISDA definitions. The attached 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.

As a result, 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.

Such an analysis could depend, among other things, on the settlement method used and on whether a Mutually Agreed Clearinghouse is specified in the trade confirmation:

- “Physical Cleared” settlement:
    - If a Mutually Agreed Clearinghouse 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 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 Clearinghouse is specified in the confirmation and counterparties cannot agree on a CCP at time of exercise, the settlement will switch to Collateralized Cash Price (see below)

- "Collateralized Cash Price" settlement:
  - If a Mutually Agreed Clearinghouse 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 swap was cleared at such Mutually Agreed Clearinghouse. In this instance, the parties implicitly agreed to use the CCP terms prevailing at time of exercise
  - If a Mutually Agreed Clearinghouse is not specified in the Confirmation, or if a Mutually Agreed Clearinghouse 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 (for USD swaptions the ISDA Collateral Cash Price Matrix specifies "OIS" sourced from the Reuters Screen Page "FEDFUNDS1" as the Discount Rate). 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

A recommendation by the ARRC would not change the 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.

B. Operational Considerations

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

1. A mechanism to agree that a swaption is one in which counterparties have agreed to exchange compensation
2. A mechanism to compute the compensation amount
3. A mechanism to exchange the compensation

Discussions are underway with MarkitSERV to create a field in MarkitWire where counterparties could explicitly specify a discount curve to be used for the settlement of a swaption. If the discount curve specified differs from the prevailing discount curve at the CCP at time of exercise, counterparties would negotiate a compensation amount to be exchanged.

This field would default to a null value for legacy swaptions (such that no compensation would be exchanged) but if bilateral counterparties jointly agree to exchange compensation, they could use the bilateral amendment functionality to confirm a value (e.g. EFFR) for this field. MarkitSERV is also planning to facilitate bulk amendments of large portfolios of swaptions.

Operationally, one proposed solution is for counterparties to exchange cash compensation for the EFFR to SOFR discounting valuation difference at exercise/expiry. LCH and CME have both offered to provide tools to compute the difference in valuation between a swap discounted at EFFR and a swap discounted at SOFR. 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 physically-settled swaptions, LCH and CME both offered to facilitate the exchange of compensation as a fee attached to the underlying 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 exercise/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 and CME have offered to provide may not be sufficient but bilateral calculations and/or third-party vendors could be used instead.

Part III: New Swaptions

To limit the size of the population of swaptions that could be subject to the valuation impact of the CCP discounting switch, some market participants have asked for greater clarity on new swaptions traded before the transition date (i.e. until October 16, 2020 for USD) that could be exercised after such date.

Attached are amendments that ISDA plans to make[4] to the 2006 ISDA definitions aimed at providing such clarity for swaptions entered into on or after these amendments take effect.

The first part of the amendments would update the ISDA Collateral Cash Price Matrix such that, when the Matrix is used, the discount rate would be EFFR for a swaption that expires prior to the date on which a global CCP switches discounting to SOFR, and SOFR after that date. This would eliminate the differential that exists in the current version of the 2006 ISDA definitions between swaptions using the Collateralized Cash Price settlement where the Mutually Agreed Clearinghouse is specified versus those where it is not specified (and therefore the Collateral Cash Price Matrix applies).

The second part of the amendments would introduce a new parameter for swaptions called the “Agreed Discount Rate”, which would be the discount rate to be used to settle the swaption. If the prevailing discount rate at the CCP at time of exercise differs from the discount rate agreed to at time of trade, the counterparties would agree that they would negotiate compensation at that time. Use of the new parameter would be optional between the counterparties.

These amendments would result in increased legal clarity concerning the intent of market participants regarding the impact of the CCP discounting switch on bilateral swaptions, with the new parameter for an “Agreed Discount Rate” providing more flexibility for counterparties to agree to a specific discount rate (potentially triggering a compensation exchange) or to use the prevailing CCP discount curve at time of exercise.

[4] Please note that ISDA is currently still soliciting feedback from its membership and other market participants on the form of these amendments and therefore could make changes before publication. Based on feedback it receives, it is also possible that ISDA would not publish some or all of these amendments.

A few things to keep in mind regarding these amendments and the new parameter:

- Economic / Risk Implications: Agreeing to a specific discount curve protects counterparties against the uncertainty associated with either a change in the CCP discounting switch date or the introduction of additional CCP discounting switches in the future. It also retains the feature of linking discount factors to the Mutually Agreed Clearinghouse if the Agreed Discount Rate matches the prevailing rate used at such Mutually Agreed Clearinghouse.
- Operational Implications: In addition to requiring the creation and population of a new field, agreeing to a specific discount curve increases the size of the population that may involve cash compensation and has dependency on a scalable way to compute and process such compensation. To reduce this operational burden, the standard market convention could either be to not specify a discount curve (since the new parameter would be optional) or to default to the current market expectation for the CCP discounting regime at time of swaption exercise/expiry (e.g. EFFR for swaptions expiring on or prior to October 16, 2020 and SOFR for swaptions expiring afterwards).
- Modeling Implications: For the update to the Collateral Cash Price Matrix, swaption models would need to be updated to use a discount curve for the underlying swap that is dependent on the expiry date of the swaption. For the new parameter, they would need to use a discount curve that is dependent on the discount curve agreed to at time of trade (if applicable).
- 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 use SOFR discounting for settlement, the more liquidity will be generated in SOFR derivatives, including prior to the CCP discounting switch date.

Part IV: Consultation Questions

Questions 1-3 refer to legacy swaptions

Question 1.

In light of considerations discussed in Part II and as it relates to legacy swaptions specifically, do you support:

A. The ARRC recommending that voluntary compensation should be exchanged
B. The ARRC recommending that voluntary compensation should not be exchanged
C. The ARRC not issuing a recommendation regarding voluntary compensation

Please explain.

Question 2.

If the ARRC issues a recommendation that voluntary compensation should be exchanged for legacy swaptions, do you support:

A. The ARRC recommending that the compensation exchange be at the trade-level and at time of swaption expiry
B. The ARRC recommending that the compensation exchange be a one-time, portfolio-level amendment prior to expiry, with compensation exchange at expiry acting as a backstop
C. The ARRC not issuing a recommendation regarding the timing of the compensation exchange

Please explain.

Question 3.

If the ARRC issues a recommendation that voluntary compensation should be exchanged for legacy swaptions, do you support:

A. The ARRC recommending that this only apply to swaptions traded prior to the date on which the ARRC issues its recommendation
B. The ARRC recommending that this only apply to swaptions traded prior to the effective date of the ISDA amendments described above for "new" swaptions
C. The ARRC recommending that this only apply to swaptions traded prior to CCP announcements** regarding their plans for the discounting switch and compensation mechanism
D. The ARRC not issuing a recommendation regarding a cut-off trade date after which compensation would no longer be recommended

Please explain.

**If you selected C, which announcement date would you support for a given CCP, recognizing that LCH and CME released their final plans on different dates and each of them also released preliminary plans prior to that?

Question 4 refers to new swaptions traded until the CCP discounting switch date

Question 4.

In relation to the amendments that ISDA will publish for new swaptions, do you support:

A. The ARRC recommending that the default should be to <u>not</u> specify a discount curve
B. The ARRC recommending that the default should be to specify a discount curve that is the prevailing discount curve at time of trade (i.e. EFFR for all swaptions <u>traded</u> prior to the CCP discounting switch date and SOFR afterwards)
C. The ARRC recommending that the default should be to specify a discount curve that is expected to be the prevailing discount curve at time of expiry (i.e. EFFR for all swaptions <u>expiring</u> prior to the expected CCP discounting switch date and SOFR afterwards)
D. The ARRC not issuing a recommendation regarding specification of a the default discount curve

Part V: Response Procedures / Next Steps

Market participants may submit responses to the consultation questions by email to the ARRC Secretariat (arrc@ny.frb.org) no later than March 9, 2020. Please coordinate internally and provide only one response per institution. Please attach your responses in a PDF document and clearly indicate "Consultation Response" in the subject line of your email. Comments will be posted on the ARRC's website as they are received without alteration except when necessary for technical reasons. Comments will be posted with attribution unless respondents request anonymity. If your institution is requesting anonymity, please clearly indicate this in the body of your email and please ensure that the PDF document you submit is anonymized. Questions regarding the consultations should also be sent to the ARRC Secretariat (arrc@ny.frb.org) and will not be posted for attribution.

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

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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 are 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 advice from their own professional advisers as to the matters discussed herein.

2 Cash Settlement

2.1 Payment of the Cash Settlement Amount

Swaptions may either be cash settled or physically settled.

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

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[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**").

[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 overrule the ISDA Settlement Matrix and specify a Cash Settlement Method in the Confirmation (section 18.2(l)).

(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 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.

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

[6] We understand that "Collateralised 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.

[8] Previously ISDAFIX Page.

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, 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 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.[9]

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.[10] The clearinghouse will either be specified in the Confirmation as the "Mutually Agreed Clearinghouse" (post-Supplement 48 only) 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), 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

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[9] Section 15.1.

[10] Section 15.2.

rate as the "discount rate").[11] Similar announcements have been made in respect of a transition from EONIA to €STR.[12]

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.

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, the valuation of the swaption should generally 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, the valuation of the swaption should generally be unaffected.

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

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

[11] 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.

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

the time of exercise of the swaption.[13] If the parties cannot agree on 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). The valuation of these swaptions should therefore be generally unaffected by the change of the clearinghouse's discount rate.

(iii) **Swaptions entered into post- Supplement 48**: 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.[14]

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 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), there will be a fallback to cash settlement with the Cash

[13] Section 15.2 (as inserted by Supplement number 28) reads as follows:

"*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>***."

[14] Section 15.2 (as amended by Supplement number 48) reads as follows:

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, 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.[…]"

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 the valuation of these swaptions should generally 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.

(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. The valuation of these swaptions should therefore be generally 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.[15]

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.[16]

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

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

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

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 CCP for transition to discounting using the RFR (the "**CCP Transition Date**")[17]. 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 RFR 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 Clearinhouse 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 at 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

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[17] CME and LCH have announced a transition date of 16 October 2020 for USD transactions for the change from EFFR 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

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 14.2(f)***]

14.2

(f) **Mutually Agreed Clearinghouse.** "Mutually Agreed Clearinghouse" means, in respect of a Swaption for which "Cleared Physical Settlement" or "Collateralized Cash Price" is specified or deemed specified in a Confirmation, the clearinghouse specified in that Confirmation, or, if a Mutually Agreed Clearinghouse is not specified in the Confirmation, a mutually agreed upon clearinghouse, agreed by both parties at the 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, 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. For the avoidance of doubt, Section 18.3(g)(iii) shall not be applicable 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 the Mutually Agreed Clearinghouse does not pay interest on cash collateral at the Agreed Discount Rate, the parties shall agree the compensation that shall be payable by one party to the other to reflect the difference between the Agreed Discount Rate and the rate of interest paid on cash collateral by the Mutually Agreed Clearinghouse. If they are unable to agree the amount of such compensation within [four] [***WG to confirm number of business days for agreeing the compensation***] 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 Transaction if the Relevant 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 on 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 on 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 VM Credit Support Annex, 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 the ISDA VM Credit Support Annex), 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 (attached) 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 14 (General Terms and Provisions relating to Settlement of Swaptions)*]**

"**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, (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.

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 prior to the CCP Transition Date**	**Discount Rate for Swaptions with an Expiration Date on or after the CCP Transition Date and for all other non-Swaption Transactions**[18]	**Settlement Rate**
AMERICAS			
USD	EFFR	SOFR	IBA Rate
EUROPE, MIDDLE EAST AND AFRICA			
CHF	SARON	SARON	Reference Banks
DKK	DKK OIS	DKK OIS	Reference Banks
EUR	EONIA	€STR	IBA Rate
GBP	SONIA	SONIA	IBA 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.

[18] **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.**

For the purpose of this Collateral Cash Price Matrix, Section 18.2(f)(i) of the 2006 ISDA Definitions is amended to read as follows:

(i) if "**IBA 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 IBA, as of the Cash Settlement Valuation Time on the Cash Settlement Valuation Date, where "**IBA**" means ICE Benchmark Administration, or any successor thereto as administrator of the ICE Swap Rates;

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.

[***Drafting note: the definitions of the rates below are all taken from the equivalent definitions in the relevant FROs in the 2006 Definitions, except EONIA, which has a more updated definition in the draft ISDA Collateral Agreement Interest Rate Definitions. Some of these refer to screen rates, others refer only to the rate as provided by the administrator. Some have temporary fallbacks if the rate is not available, others do not. TBC whether there should be a consistent approach (i.e. only refer to rate provided by the administrator and remove screen rates and remove all temporary fallbacks) or to follow the approach below which reflects the approach for the same rate in the 2006 Definitions***. ***Note that none of these have permanent cessation fallbacks***.]

"**CCP Transition Date**" means, in respect of a Transaction and the currency of denomination of that Transaction (the "Transaction Currency"), the date on which a Global CCP first applies the rate in column 3 in the table above (if such rate differs from the rate in column 2 in the table above) as the interest rate on cash collateral denominated in the Transaction Currency to Transactions cleared by such Global CCP.[19]

"**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. [***Note to draft: follows the definition of DKK OIS in DKK-DKKOIS-OIS-COMPOUND in the 2006 Definitions***. ***In previous version of the Collateral Cash Price Matrix, the Screen page for DDK OIS was 'HABUCOP' – correct screen page to be confirmed if one is to be included***.]

"**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. [***Note to draft: follows the definition in USD-Federal Funds-H.15 in the 2006 Definitions***]

"**€STR**" means, in respect of any day, the level of the euro short term rate provided by the European Central

[19] This date is expected to be, in respect of Transaction denominated in USD, 16 October 2020, and in respect Transactions denominated in EUR, 22 June 2020.

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. [***Note to draft: follows the definition in EUR-EuroSTR-Compound in Supplement 59 to the 2006 Definitions]***

"**EONIA**" means, in respect of any day, the level of the euro overnight index average in respect of that day, if that day is a Target Settlement Day, or in respect of the Target Settlement Day preceding that day, if that day is not a Target Settlement Day, provided by the European Money Markets Institute as administrator of the benchmark (or a successor administrator) on the website of the European Money Markets institute at https://www.emmi-benchmarks.eu, or any Successor Source. [***Note to draft: follows the definition used in the draft ISDA Collateral Agreement Interest Rate Definitions***]

"**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]. [***Note to draft: this limb in brackets is superfluous at present but has been included in case the CCP Matrix is updated at a later date to include new Discount Rates for any other currencies*****].**

"**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 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. [***Note to draft: follows the definition of SARON in CHF-SARON-OIS-COMPOUND in Supplement 51 to the 2006 Definitions***]

"**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. [***Note to draft: follows the definition of SIOR in SEK-SIOR-OIS-COMPOUND in the 2006 Definitions***]

"**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 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 SOFR as published in respect of the first preceding U.S. Government Securities Business Day for which SOFR was published on the New York Fed's Website. [***Note to draft: follows the definition of SOFR in USD-SOFR-COMPOUND in Supplement 57 to the 2006 Definitions***]

"**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. [***Note to draft: follows the definition of SONIA in GBP-SONIA-COMPOUND in the 2006 Definitions***]

"**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. [***Note to draft: follows the definition of TONAR in JPY-MUTANCALL-TONAR in the 2006 Definitions***.]