

**Press release**

(For meeting minutes, please see page 3 ff.)

National Working Group on Swiss Franc Reference Rates

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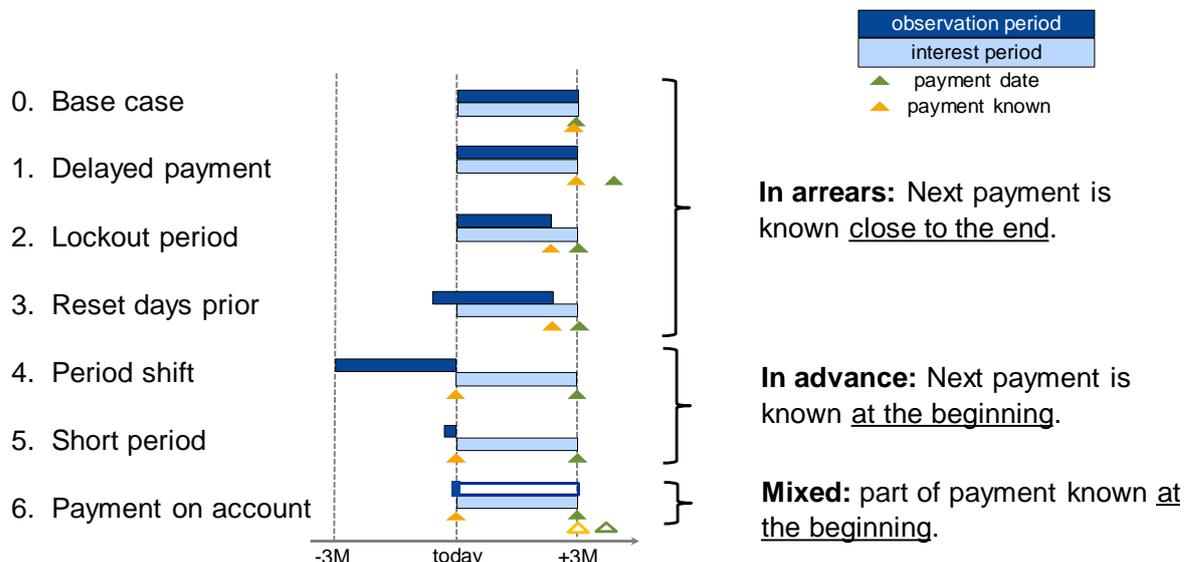
Zurich, 6 February 2019

**Executive summary of the 5 February 2019 meeting of the National Working Group on Swiss Franc Reference Rates**

The National Working Group on Swiss Franc Reference Rates (NWG) met on 5 February 2019 to discuss current challenges in respect of the LIBOR transition in Switzerland and relevant international developments (see meeting agenda below). At its previous meeting in [October](#) last year, the NWG recommended using a compounded SARON as a term rate alternative to the CHF LIBOR wherever possible.

The key item of yesterday’s meeting was to discuss the options for using a compounded SARON in cash products. The Loan and Deposit Market sub-working group identified and described a set of options (see Figure 1). Depending on the need for cash flow certainty, an ‘in arrears’ or an ‘in advance’ option may be best suited.

Figure 1: Options for using a compounded SARON in cash products



The Capital and Derivatives Market sub-working group analyzed different compounded SARON options for the use in floating rate notes (FRNs), with a preference for the ‘reset days prior’-option. Based on this assessment, the NWG came to the conclusion that there are no impediments to issuing SARON FRNs.

The NWG members agreed on the following main recommendations:

- Market participants should consider and assess the presented options for using a compounded SARON.
- Financial institutions should individually define action plans with respect to their product strategy.
- Exchanges are encouraged to facilitate the listing of SARON FRNs.

SIX announced that it would provide daily publication of compounded SARON. Go-live is expected for the second half of 2019.

Furthermore, in an effort to raise awareness for the LIBOR transition in Switzerland, the NWG invited infrastructure providers to a webinar, to be held on 26 February 2019.<sup>1</sup>

The minutes of the meeting, including the slide deck containing the details about the discussed options, will be published in due course on the [NWG website](#).<sup>2</sup>

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<sup>1</sup> Interested infrastructure providers can register for the event via [nwg@snb.ch](mailto:nwg@snb.ch). Further details on the webinar will be provided to the registered participants in due course.

<sup>2</sup> The National Working Group on Swiss Franc Reference Rates is the key forum for considering proposals to reform reference interest rates in Switzerland and discussing the latest international developments. NWG recommendations are not legally binding. The NWG is co-chaired by a representative of the private sector and a representative of the SNB. The SNB supports the work of the NWG and acts primarily as a moderator. Furthermore, the SNB runs the NWG’s technical secretariat and facilitates the organization of the NWG meetings.

# Minutes of the 5 February 2019 meeting of the National Working Group on Swiss Franc Reference Rates

## 1. Introduction

- The two co-chairs of the National Working Group on CHF Reference Rates (NWG) welcomed all attendees to the twenty-first meeting and reminded them of their responsibilities related to [competition law and confidentiality](#). The aim of this meeting was to discuss options for using a compounded SARON in cash products. Additionally, meeting participants were provided an update on SARON-based derivatives, open issues regarding effects on financial reporting, and on the efforts of the NWG to raise awareness among infrastructure providers.

## 2. General update

- Meeting participants were briefed about two relevant international developments since the last NWG meeting:
  - ICE Benchmark Administration has launched a survey on the use of LIBOR currencies and tenors. The purpose of the survey is to identify the LIBOR settings that are most widely used. The survey can be completed until 15 February and the results are expected to be published in the first half of this year.
  - The Working Group on Euro Risk-Free Rates (euro working group) has launched two separate public consultations. The first consultation seeks feedback of market participants on the working group's assessment of the four term rate methodologies (preference for a purely OIS quotes-based approach). The euro working group plans to make a recommendation on risk-free term rates as (fallback) reference rates in spring 2019.

The second consultation seeks feedback on the euro working group's recommendations on the EONIA-ESTER transition. The euro working group proposes that for a limited transition period, EONIA will be recalibrated such that EONIA is calculated as ESTER plus a fixed spread and thus no longer relies on a panel of banks. A summary of the feedback to the transition report will be published in February 2019.

## 3. Fallback language: update on ISDA consultation

- A representative of ISDA presented the results of the benchmarks fallback consultation for, among others, CHF-, GBP- and JPY- LIBOR derivatives. A majority of respondents have indicated their preference for a compounded setting in arrears for the risk-free rate (RFR) in combination with a historical mean/median approach for the spread adjustment. ISDA will proceed with developing fallbacks for inclusion in its standard definitions for those

currencies covered by the consultation. They expect to finalize the implementation of the fallbacks into the ISDA Definitions by the end of 2019.

- The remaining open items (i.e. mean or median, duration of the lookback period) will be addressed in a second consultation in Q1 2019. In addition, ISDA will launch a supplemental consultation for USD LIBOR, CDOR, and HIBOR in Q1 2019. Whether EURIBOR and EUR LIBOR will be covered by this consultation remains still to be decided.
- A member of the NWG showed that markets already reflect the results of the ISDA consultation. In reaction to the publication of the preliminary results, the IRS-OIS-basis curve flattened by around 4 bps and approached the historical spreads.

## 4. Compounded SARON for cash products

### 4.1. Recap recommendation of last NWG meeting (October 2018)

- At the [October](#) NWG meeting, the majority of NWG members agreed that a robust forward-looking term fixing based on SARON derivatives is unlikely to be feasible and therefore recommended to use a compounded SARON as a term rate wherever possible.
- In order to facilitate the implementation of a compounded SARON, the NWG commissioned work to identify options for using a compounded SARON in cash products.

### 4.2. Options for using a compounded SARON

- Meeting participants were reminded of SARON's solid footing which extends to compounded SARON.
  - From 1999 until now, the period for which SARON fixings are available, compounded SARON is lower than three-month (3M) CHF LIBOR, as it does not entail credit risk.
  - The volatility of 3M compounded SARON is lower than for 3M CHF LIBOR and 3M CHF LIBOR Futures, in particular during times of market stress. A forward-looking term rate based on SARON Futures would result in higher volatility than a compounded SARON, as futures represent expectations, which most often are more volatile than realized rates.
- A representative of SIX informed meeting participants that they will provide daily publication of compounded SARON for all possible combinations of start and end dates over the past 12 months. Go-live is expected for the second half of 2019.
- Meeting participants were provided an overview of the options for using a compounded SARON.<sup>1</sup> Four options are based on a compounded SARON in arrears (base case, delayed payment, lockout period, reset days prior). For the latter three of those options the next payment is known a couple of days before the payment is due. Two options are based on a compounded SARON in advance (period shift, short period), where the next payment is

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<sup>1</sup> A detailed overview of the identified options is provided on slides 23-26 and 54-63.

known already at the beginning of the period. Lastly, there is one option based on a hybrid approach (payment on account), where only part of the payment is known at the start of the period.

- There are different forms of cash flow certainty, and different options are best suited to meet the specific needs for cash flow certainty.
  - If there is a need for total cash flow certainty over the entire lifetime of a product, then a fixed-rate product will be best suited.
  - If a floating-rate product is preferred and if cash flows due at the end of an interest period need to be known at the beginning of the interest period (as it is the case with LIBOR), an ‘in advance’-option is best suited.
  - If a floating-rate product is preferred and if interest payments known close to the end of a period can be handled, e.g. from a cash management perspective, an ‘in arrears’-option is most suitable.
- Between ‘in arrears’ and ‘in advance’-options for using a compounded SARON, there is a trade-off between knowing cash flows in advance and the complexity of the respective approach. In other words, having cash flow certainty at the beginning of an interest period with an ‘in advance’-option comes at the price of a more complex way of determining interest payments or hedging interest rate risk.
- ‘In arrears’-options:

#### **0. Base case**

In the base case, the observation period is identical to the interest period. As a result, the next interest payment is only fully known one day prior to the end of the interest period at 6 p.m.<sup>2</sup>, whereas the interest payment is due one day later at the last day of an interest period. The notional is paid at the start of the period and repaid on the last day of the contract period together with the last interest payment.

#### **1. Delayed payment**

In contrast to the base case, the interest payments are delayed by a certain number of days and are thus due a couple of days after the end of an interest period. The idea is to provide more time for operational cash flow management. In case of a lag of two days, the cash flow of the loan matches the cash flow of a SARON swap, allowing to perfectly hedge the loan. In the last interest period, the interest payment is due after the repayment of the notional, which leads to a mismatch of cash flows and may be difficult to handle from an operational and credit risk perspective.

#### **2. Lockout period**

In this option, SARON is no longer updated (i.e. frozen) for a certain number of days prior to the end of an interest period (lockout period). During this time, the SARON fixing of the day prior to the start of the lockout period is applied for the remaining days of the

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<sup>2</sup> SARON 6 p.m. fixing.

interest period. As a result, compounded SARON for the entire interest period can be calculated a couple of days before the end of the interest period. This option is predominantly used for SOFR floating rate notes (FRNs) with a lockout period of typically four days.

One side effect of the lockout period is that the calculation of the interest rate might be considered to be less transparent for clients and more complex for product providers to implement. Also, the option involves interest rate risk that is difficult to hedge due to potential changes in SARON during the lockout period.

### **3. Reset days prior**

In contrast to the base case, the observation period for the interest rate calculation starts and ends a certain number of days prior to the interest period. As a result, the interest payment can be calculated prior to the end of the interest period. This option is predominantly used for SONIA FRNs with an offset period of five days. This option involves slightly increased interest rate risk due to changes in the yield curve over the lifetime of the product. There are ways to hedge this risk, if required.

- ‘In advance’-options:

### **4. Period shift**

In this option, interest payments are determined on the basis of the compounded SARON of the previous period. In order to ensure that the present value of this option is equivalent to the base case, a mark-up can be added to the compounded SARON of the previous period. This mark-up compensates for the effects of the period shift, with information for the last observation period derived from the SARON-OIS curve. As a result, interest payments are already known at the start of the interest period, as in the case of LIBOR-based products.

Having known interest payments at the beginning of the period comes however at the price of increased complexity. Early termination becomes more complex, as most likely some sort of compensation mechanism is required. Also, due to the period shift, there is a mismatch between the cash flows of the loan and the swap, which increases complexity for hedging.

### **5. Short period**

In this option, a single SARON fixing or SARON fixings for a certain number of days, which are compounded, are applied for the entire interest period. Given the short observation period, the interest payment is already known in advance (i.e. after the first day in case a single SARON fixing is used, or after a certain number of days in the latter case) and due on the last day of the interest period. In this option, the interest rate risk cannot be hedged with currently existing instruments.

- ‘Hybrid’-option:

#### **6. Payment on account**

This option combines a first payment (instalment payment) known at the beginning of the interest period with an adjustment payment known at the end. This is similar to billing for electricity consumption in Switzerland. The calculation of the instalment payment could be based on latest SARON fixings. The adjustment payment is calculated from the differential between the instalment payment and the compounded SARON realized during the interest period and paid a certain number of days after the end of the interest period by either party (i.e. additional payment by the client or a repayment by the product provider).

As a result, part of the interest payment is known already at the start of the period. However, complexity increases, as for early termination some sort of compensation mechanism is required.

- The Loan and Deposit (L&D) sub-working group did not find any legal obstacles under Swiss law to the implementation of any of the identified options. However, market participants have to assess the legal compliance of their preferred option(s) with their own legal departments.
- The NWG recommends to market participants to consider and assess these options. Due to competition law considerations, the NWG will not provide a recommendation for one of the options and market participants are encouraged to assess the options individually for their own purposes. Furthermore, the NWG recommends to financial institutions to define action plans with respect to their product strategy.
- In a next step, the NWG will share the presented options with working groups in other currency areas in order to strengthen international coordination and achieve a common terminology. As such, the NWG will contribute to the forthcoming paper of the Financial Stability Board’s Official Sector Steering Group (OSSG) on the usage of compounded rates.

### **4.3. SARON Floating Rate Notes**

- Based on the assessment conducted by the Derivatives and Capital market (D&C) sub-working group, the NWG sees no impediments to future issuances of SARON FRNs. The NWG encourages exchanges to work on the process for listing SARON FRNs, with a preference for interest rate determination based on the option “reset days prior” with an offset period of five days. Additionally, the NWG suggested other provisions for FRNs as laid out on slide 32 of the deck.
- This option is predominantly used for SONIA-linked FRN issuances. Behind this option, the NWG sees the option “lockout period” as a secondary choice. This option is predominantly used for SOFR-linked FRN issuances. Details about the assessment are provided on slides 64-67 in the appendix of the slide deck.
- As a next step, the D&C sub-working group will develop a standard fallback language for SARON FRNs in case SARON would cease to exist.

## 5. SARON-based derivatives products

- Meeting participants were updated on the work of the international working group on cross-currency swaps. The main open points at this stage are how to achieve alignment of payment dates across currency areas and how the design of potential fallback language for cross-currency swaps could look like.
- FX swaps and FX forwards are widely used to swap variable CHF funding into a foreign currency. In a world of compounded SARON in arrears, using standard FX swaps will likely be refrained from due to the different interest calculation methods. FX swaps are priced on the prevailing money market rates for the respective term, i.e. in advance, while the interest differential between the two currencies on an in arrears variable funding operation is only known at the end of the period. The NWG has identified two possible solutions to this issue.
  - Either a series of three swaps can be used. (1) Swap SARON floating to CHF 3M<sup>3</sup> fixed by using a SARON swap. (2) Then, swap 3M CHF fixed to 3M foreign currency fixed by using a standard FX swap. (3) And finally, use a swap linked to the alternative RFR of the foreign currency (e.g. SOFR swap) to swap to foreign currency floating.
  - Or, a one-period cross currency swap can be used. However, such a product does not yet exist on pairs of two compounded term rates and would first need to be established. A one-period cross currency swap (e.g. with a tenor of 3M) could be used to directly swap CHF SARON to foreign currency floating for the duration of the period (e.g. 3M).
- With respect to SARON based caps and floors, it was agreed that in order to have an effective and efficient hedge, caps/floors should reference compounded SARON (in arrears) for the relevant interest rate period(s) instead of directly referencing each SARON fixing. The effective design of caps and floors very much depends on the design of the on-balance sheet products though.

## 6. Effects on financial reporting: open issues

- Barbara Seitz of the Copenhagen Business School provided an assessment of the open issues of effects on financial reporting. The IBOR reform will affect financial reporting mainly related to the accounting choice ‘hedge accounting’, which aims to avoid artificial earnings volatility. This might occur if value changes in the hedging instrument and/or hedged item are recognized in different reporting periods. US GAAP and IFRS are influenced more severely by the transition from LIBOR to new reference rates compared to SWISS GAP FER, given that the latter is a very principle-based set of standards. Regarding IFRS and US GAAP, the biggest concern is an increase in (point-in-time) P&L volatility on and after the transition from LIBOR to new reference rates. Increased P&L volatility could occur with de-designation of hedge accounting relations when fair value hedge adjustments are amortized to P&L and the cash flow hedge reserve is reclassified to P&L. Subsequent use of LIBOR-hedge-accounting derivatives might also increase P&L volatility due to measurement at fair value through P&L absent hedge accounting, or by hedge accounting re-designation with non-zero fair values (for

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<sup>3</sup> Assuming, for this example, that 3M is the desired term.

reporting under IFRS: increase in hedge accounting ineffectiveness due to different mismatches in value changes of the hedged item and the hedging instrument). Basis risk, i.e., the transition of hedging instrument and hedged item under different timelines, is perceived as a further issue. FASB and IASB have not issued concrete guidance on potential relief yet, but it is expected in due course.

## **7. Raising awareness among infrastructure providers**

- NWG members were informed about a webinar/conference call for infrastructure providers, which will be held by the NWG on 26 February 2019. The aim of the webinar is to update infrastructure providers that are most relevant for the Swiss market on recent NWG recommendations and to elaborate the options how to incorporate compounded SARON.
- Meeting participants were briefed on the infrastructure forum held by the Sterling working group on 31 January 2019. One of the main take-aways has been that any guidance is highly appreciated by infrastructure providers. Additionally, international coordination was considered of high importance.

## **8. Communication**

- A representative of FINMA briefed NWG members about the guidance (“Aufsichtsmitteilung”) published in December 2018 on the main risk areas for supervised institutions associated with the LIBOR transition. The aim was to highlight the main risks and to ensure that supervised entities address these risks in good time.

## **9. Recommendations**

- NWG recommendations regarding contractual robustness:
  - Market participants should follow the international developments and give feedback to the ISDA consultations.
- NWG recommendations regarding cash products:
  - Market participants should consider and assess the options for using a compounded SARON.
  - Financial institutions should individually define action plans with respect to their product strategy.
  - SARON FRNs:
    - Exchanges are encouraged to facilitate the listing of SARON-based FRNs.
    - Market participants should consider the assessment provided.

## 10. Next steps

- The following items will be addressed in the L&D sub-working group:
  - Share the presented options with working groups in other currency areas to strengthen international coordination and achieve common terminology and knowledge of compounded term rate usage.
  - Engage further in discussions to increase acceptance of compounded SARON.
  - Monitor national and international developments regarding the implementation and/or usage of compounded rates.
- The following items will be addressed in D&C sub-working group:
  - Finalize a standard for fallback language for SARON FRNs.
  - Continue to work on the design of SARON-based instruments, e.g. caps and floors.
  - Address open points regarding the effects on financial reporting with international standard setting bodies (IASB) and other currency working groups.
- The next NWG meeting is scheduled for Thursday, 13 June 2019, 15:00 - 17:00. Personal attendance is highly appreciated, but it will also be possible to dial in by phone.

## Attendance at the 5 February 2019 meeting

Martin Bardenhewer	– Zürcher Kantonalbank, co-chair
Marcel Zimmermann	– Swiss National Bank, official sector representative, co-chair
Philipp Ackermann	– Raiffeisen Switzerland
Pascal Anderegg	– Zürcher Kantonalbank
Christian Bahr	– SIX, SRR administrator
Roland Beck	– PostFinance (by phone)
Markus Bieri	– Swiss Association of Corporate Treasurers
Marie-Anne Bourgoz Gorgé	– Banque Cantonale de Genève (by phone)
Christophe Cherdel	– Banque Cantonale Vaudoise
Clare Dawson	– Loan Market Association (by phone)
Guillermo De La Fuente	– Association of Corporate Treasurers - Suisse Romande (by phone)
Robert Eigenheer	– SBB
Markus Engeli	– Zurich Insurance
Fernando Fasciati	– Raiffeisen Switzerland
Fernando Gardoni	– St. Galler Kantonalbank
Christian Gerber	– AXA
Raffael Goldenberger	– Entris Banking
Thomas Graf	– Valiant (by phone)
Philipp Halbherr	– Swiss Bankers Association
Stephane Hegi	– Banque Cantonale Vaudoise (by phone)
David Hiscock	– International Capital Market Association (by phone)
David Horner	– LCH (by phone)
Otto Huber	– Credit Suisse, chair Sub-NWG D&C
Remo Kübler	– Swiss Bankers Association (by phone)
Colt Lake	– UBS
Alfred Ledermann	– UBS, chair Sub-NWG L&D
Nicolas Lergier	– Graubündner Kantonalbank
Ernst Lienhard	– Swiss Re
Kam Mahil	– Loan Market Association
Bruno Marin	– BNP Paribas
Jonathan Martin	– International Swaps and Derivatives Association
Franklin Meimoun	– Union Bancaire Privée
Franck Paniandy	– Association of Corporate Treasurers - Suisse Romande (by phone)
Jacques Piasko	– Julius Bär
Stefan Pomberger	– Bank Vontobel
Susanne Ramer	– SIX, Treasury and Finance
Felix Roudier	– Credit Suisse
Daniel Schenker	– Zürcher Kantonalbank (by phone)
Beat Schlegel	– Clientis (by phone)
Sandro Schmid	– Swiss Risk Association
René Schwyzer	– LGT Bank
Barbara Seitz	– Copenhagen Business School
Marco Steiner	– Pictet & Cie
Roland Studer	– Credit Suisse (by phone)
Thomas Sturzenegger	– Julius Bär (by phone)
Andrea Surro	– EFG Bank
Isabelle Sutter	– Bank CIC (by phone)

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|--------------------|--|
| Pierre-Henri Turc  | – Banque Cantonale de Genève (by phone)  |
| Matthias Vögeli    | – Swiss Life (by phone)  |
| Raeto von Sprecher | – SIX Swiss Exchange, Treasury and Finance   |
| Hugues Weil        | – Credit Suisse  |
| Philip Whitehurst  | – LCH (by phone)   |
| Sébastien Zöllner  | – Swiss Bond Commission  |
|                    |  |
| Nicolas Graafen    | – State Secretariat for International Finance, official sector representative (by phone) |
| Christian Capuano  | – Swiss Financial Market Supervisory Authority, official sector representative           |
| Stefan Kurt        | – Swiss Financial Market Supervisory Authority, official sector representative           |
| Roman Baumann      | – Swiss National Bank, official sector representative                                    |
| Matthias Jüttner   | – Swiss National Bank, official sector representative                                    |
| Basil Guggenheim   | – Swiss National Bank, official sector representative                                    |
| Benjamin Müller    | – Swiss National Bank, official sector representative                                    |
| Moritz Iten        | – Swiss National Bank, official sector representative                                    |

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# National Working Group on CHF Reference Rates

21<sup>st</sup> Meeting  
5 February 2019

# Agenda

1. Opening remarks
2. General update
3. Fallback language: update on ISDA consultation
4. Compounded SARON for cash products
5. SARON-based derivatives products
6. Effects on financial reporting: open issues
7. Raising awareness among infrastructure providers
8. Communication
9. Recommendations
10. Next steps



# ICE Benchmark Administration – LIBOR end user survey

- ICE Benchmark Administration launched a **survey on the use of LIBOR** currencies and tenors [feedback by 15 February 2019]
  - «The **purpose** of the survey is to identify the LIBOR settings that are most widely used. IBA will use the results of the survey to inform its work in seeking the support of globally active banks for the publication of certain LIBOR settings after year-end 2021.»
  - «The **primary goal** of this work would be to provide those LIBOR settings to users with outstanding LIBOR-linked contracts that are impossible or impractical to modify. Any such settings would need to be compliant with relevant regulations and in particular those regarding representativeness.»

Source: <https://ir.theice.com/press/press-releases/all-categories/2018/12-04-2018-102958784>

# Euro area – launch of two public consultations

- The working group of euro risk-free rates has launched two separate **public consultations**

- 1) Consultation on determining an **ESTER-based term structure methodology** as a fallback for EURIBOR-linked contracts.

The working group seeks feedback on...

- **Potential use cases** for which a fallback based on a forward-looking term rate would be necessary or desirable.
- Working group's **assessment of the methodologies**, resulting in a preference for an **OIS-quotes based methodology**.

→ **Recommendation** on term rate expected for **spring 2019**.

- 2) Call for feedback on the report on the **transition from EONIA to ESTER**.

The working group seeks feedback on...

- **Technical analysis** of the four identified transition paths done by the working group.
- **Recommendations** by the working group to EMMI and market participants:<sup>1</sup>
  - Recalibration of current EONIA methodology to ESTER plus a spread for a limited transition period (until end of 2021)
  - ...

→ **Summary of the feedback** will be published in **February 2019**.

<sup>1</sup> Please consult the full [report](#) for a complete list of all recommendations.

### 3. Fallback language: update on ISDA consultation

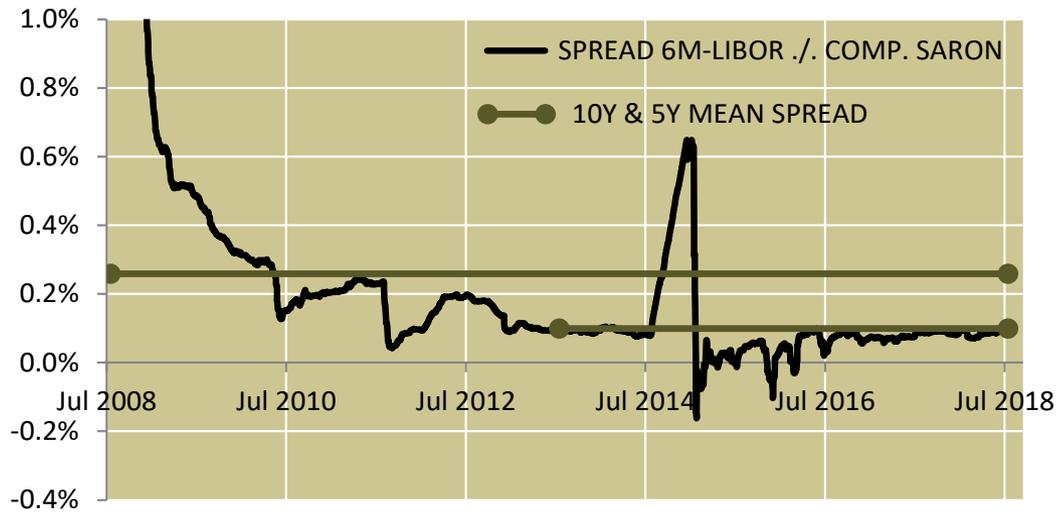
# Results of the ISDA consultation<sup>1</sup>

- A majority (86 of the 142) of respondent ranking preferences were in favor of the **compounded setting in arrears rate with the historical mean/median approach** to the spread adjustment (December 2018).
- The next combination received less than half of the same support – 41 respondent rankings favored a compounded setting in arrears rate with the forward approach to the spread adjustment.
  - Many of these responses identified compounded setting in arrears rate with the historical mean/median approach as the second best option.
- ISDA will proceed with developing fallbacks for inclusion in its standard definitions based on the **compounded setting in arrears rate and the historical mean/median approach** to the spread adjustment for all of the benchmarks covered by the ISDA Consultation (GBP LIBOR, CHF LIBOR, JPY LIBOR, TIBOR, Euroyen TIBOR, BBSW).
- Open items related to the spread adjustment:
  - Mean or median
  - Lookback period
  - Other technical issues
- Next steps:
  - Consultation on remaining benchmarks (USD LIBOR, CDOR and HIBOR in Q1; EURIBOR and EUR LIBOR TBD)
  - Additional work on open parameters for the spread adjustment, including soliciting market feedback

<sup>1</sup> Anonymized narrative summary of responses to the ISDA consultation on term fixings and spread adjustment methodologies, available at <http://assets.isda.org/media/04d213b6/db0b0fd7-pdf/>

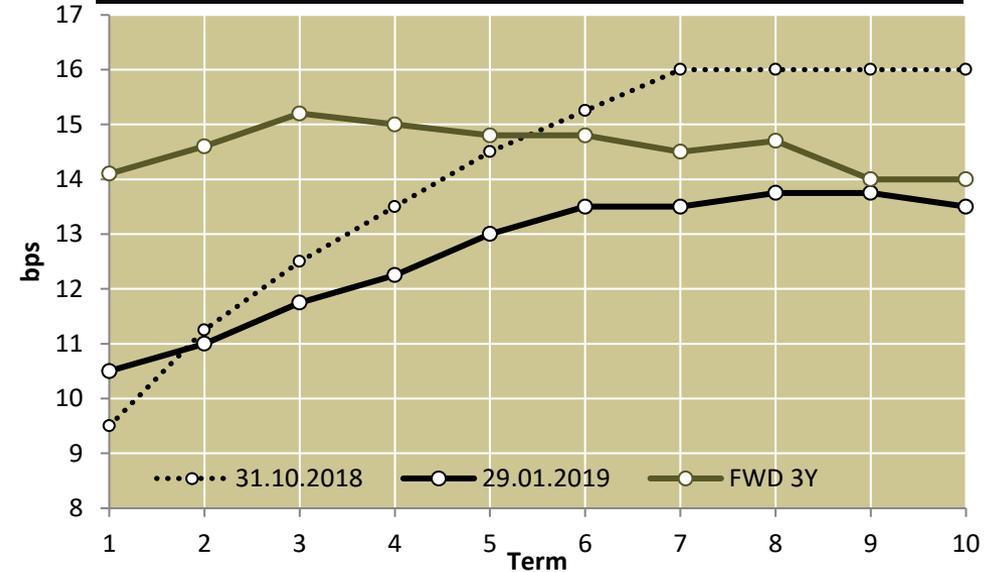
# Spread determination for LIBOR transition – historical approach

**HISTORICAL SARON / IBOR-SPREAD**



- The chart above shows the difference between 6M-CHF-LIBOR and calculated 6M compounded in arrears SARON.
- The spread tightened since 2010.
- 10Y mean of the spread is around 26bps whereas 5Y mean is around 10bps. 10Y median is around 10bps and 5Y median slightly above 8bps.
- The median is more stable than the mean.

**TODAY'S BASIS CURVE VS. OCT 18 AND IMPLIED CURVE IN 2022**



- The chart above compares the basis curve of end of October 2018 and the current basis curve with today's implied curve for beginning of 2022.
- Following the publication of the preliminary results of the ISDA consultation the curve flattened by around 4 bps and approached the historical spreads.
- Nevertheless there still is a term structure of the basis which vanishes on a forward basis.

▶ Markets are already reflecting the preliminary results of the ISDA consultation

## 4. Compounded SARON for cash products

# Content

- Recap recommendation of last NWG meeting (October 2018)
- Options for using a compounded SARON
  - Describes most important elements of a compounded rate and differences to LIBOR
  - Shows how a compounded rate is calculated
  - Describes the various options
- SARON Floating Rate Notes (FRN)

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# Recap recommendation of last NWG meeting (October 2018)

# Terminology and recap: SARON term rate

## *Forward-looking* term rate

expected sequence of  
overnight rates

Cash-based

*e.g. 3M LIBOR*

Derivatives-  
based

*e.g. ICE-fix*

## *Compounded* term rate

sequence of realized  
overnight rates

Compounded in  
arrears

Compounded in  
advance

Term rate terminology based on [FSB](#) (2018)

# Feasibility of term rate approaches

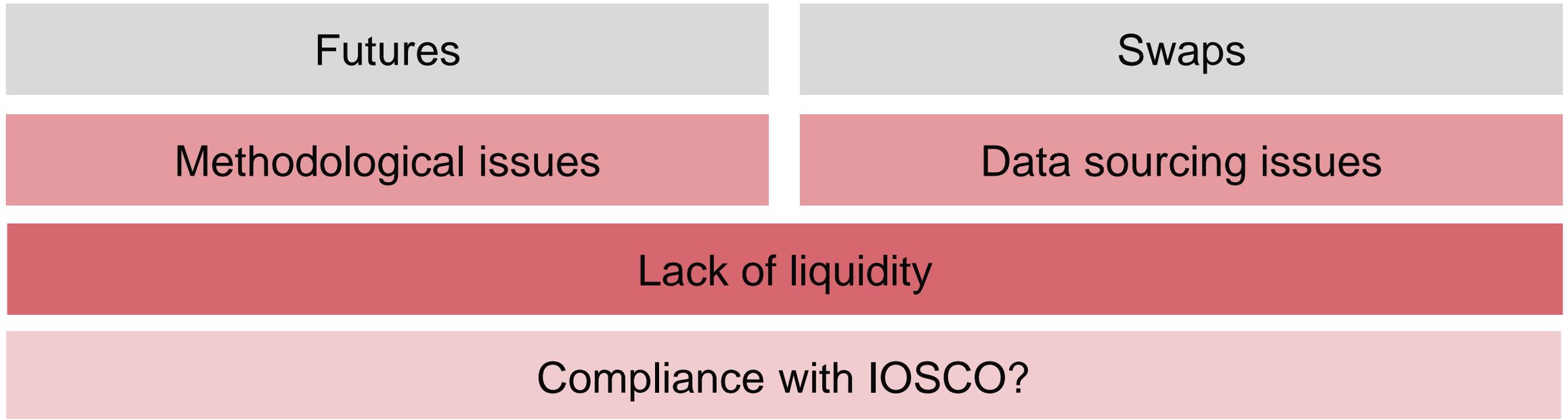
	Daily Volume (∅ 2018)	# Daily Trades (∅ 2018)
<b>SARON</b> (SARON rate volume)	CHF 4'692 mn	44
Compounded term rate:		
<b>Compounded SARON 3M</b> (Sum of SARON rate volume for 3M, i.e. 63 trading days)	CHF 286'949 mn	2'227
Forward-looking term rate (derivatives-based):		
<b>SARON Futures</b>	CHF 3 mn	Less than 1
<b>SARON Swaps 3M</b>	CHF 250 mn	Less than 1

Note: For SARON Futures the second contract with start date 29 October 2018 is considered. SARON Swaps 3M volumes are approximated and both legs of the trade are considered (as reported by LCH).

Source: SNB, SIX, Bloomberg, LCH

**Proposition:** Every forward looking term rate based on derivatives will not be as robust as the reference rate itself.

# Assessment of derivatives-based term rates



→ Robust derivatives-based term rate is not feasible

→ If situation changes, the use as a *fallback* rate might be reassessed

# Recommendation for SARON-based term rate

- It is unlikely that a robust derivatives-based term fixing is feasible.
- NWG recommends using a compounded SARON wherever possible.
- There are ways to mitigate or solve cash flow uncertainty.

## Considerations based on feasibility and end users' needs:

**Robustness:** Every term rate based on derivatives will not be as robust as the reference rate itself; If situation changes, the use as a fallback rate might be reassessed.

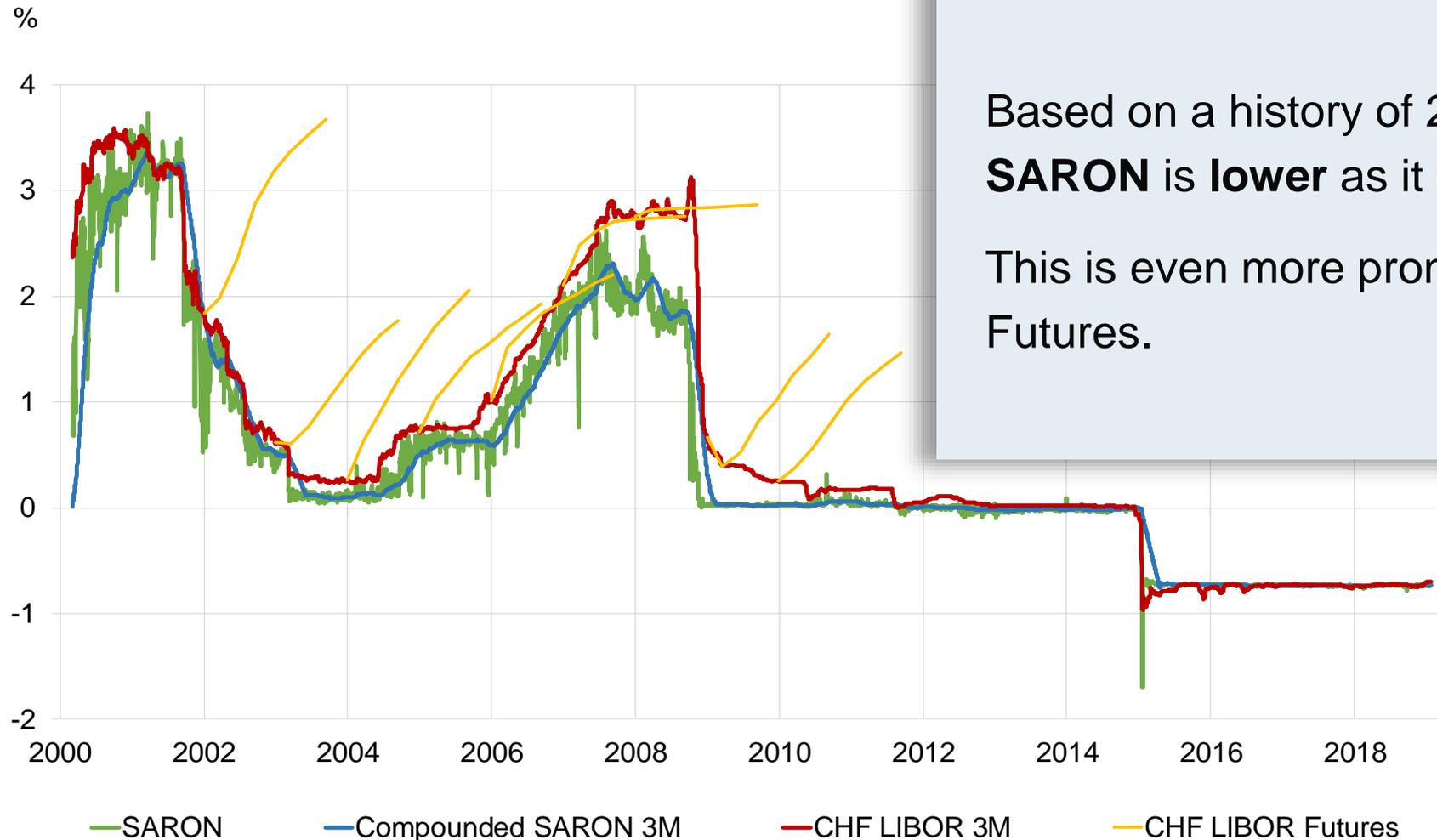
**Official fixing:** Acceptable methodology and compliance with benchmark regulation unlikely for a CHF derivatives-based rate.

**Payment known:** A compounded term rate doesn't exclude per se an ex-ante knowledge of the next cash flow.

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# Options for using a compounded SARON

# Level of compounded SARON compared to LIBOR and LIBOR Futures

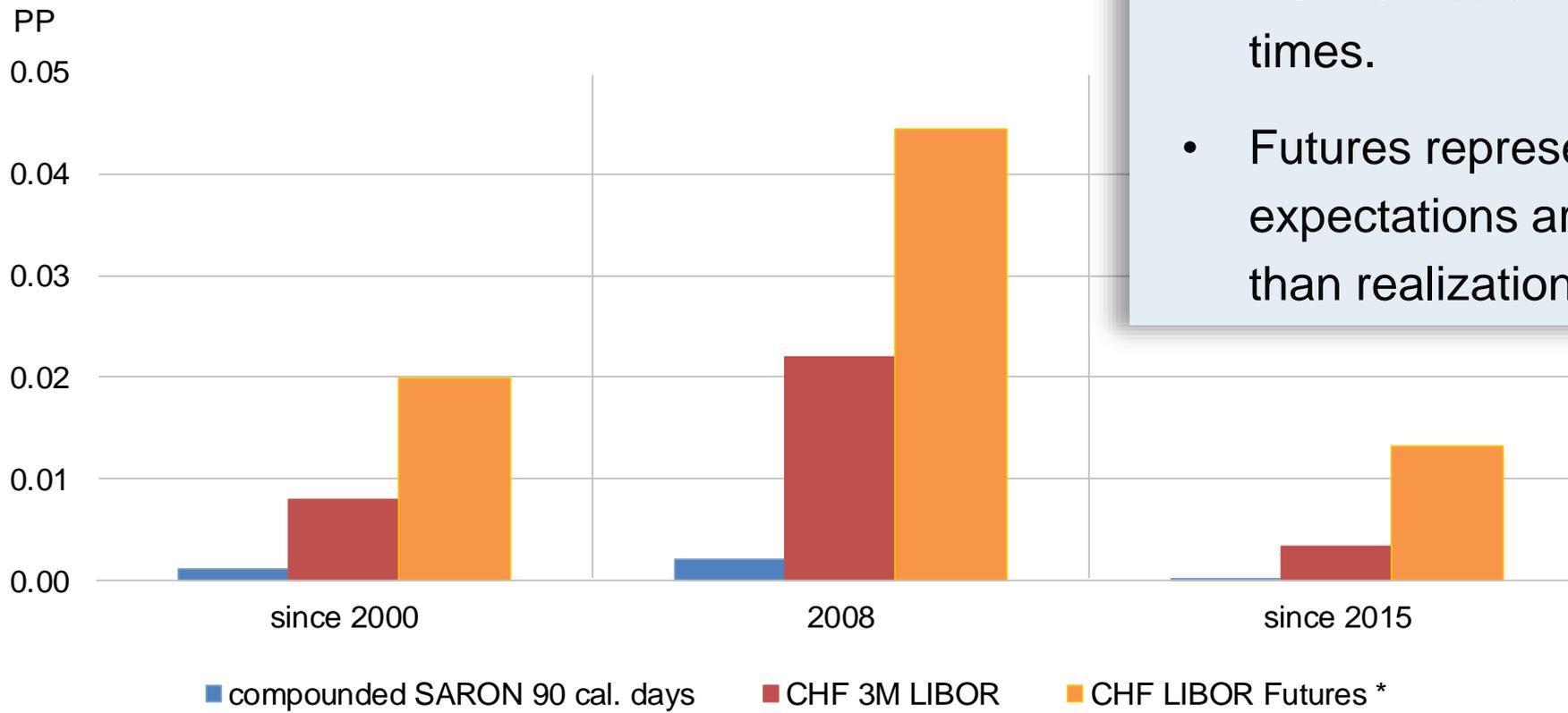


Based on a history of 20 years, **compounded SARON** is **lower** as it does not entail credit risk. This is even more pronounced compared to LIBOR Futures.

# Volatility of compounded SARON compared to LIBOR and LIBOR Futures

## STANDARD DEVIATION

based on a 30 days moving standard deviation of first differences



- Volatility of compounded SARON is **lower** than for LIBOR, especially during crisis times.
- Futures represent expectations – and expectations are most often more volatile than realizations.

\*constant maturities of 90 days, based on a linear interpolation of the 1. and 2. Futures

# SARON – a representative and robust Swiss benchmark

## Representative

- Secured overnight money market conditions are **reflected at all times**.
- Based on **actual transactions** and binding quotes of active platform users of a set of more than 160 market participants in the regulated Swiss repo market.
- Represents by far the most liquid segment of the CHF money market.

## Robust

- Methodology is **publicly available** and transparent.
- The counterparty default risk is minimized in the repo market and outliers are excluded. Therefore, SARON is **resilient in times of market stress**.

## Administrated in Switzerland

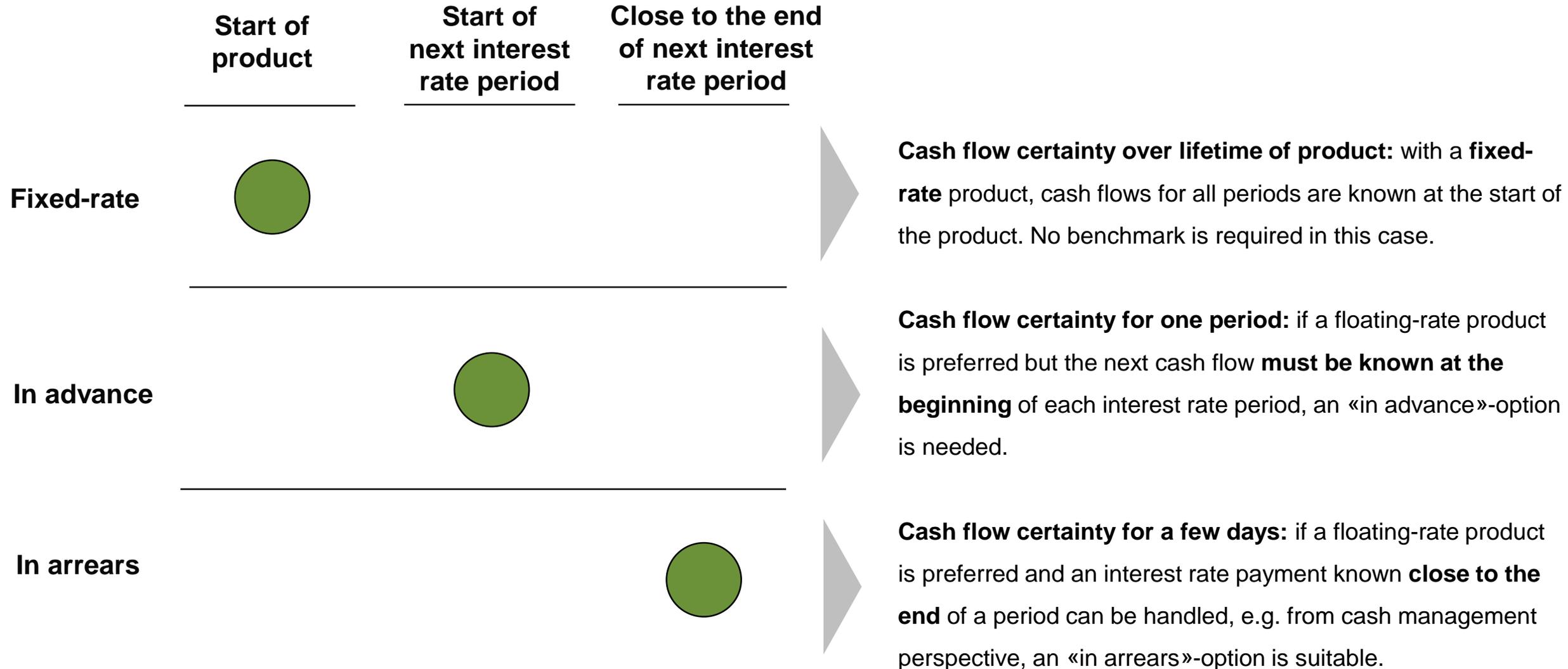
- Established in **2009** and calculated back to 2000, with **daily fixings**.
- **Administrated by SIX<sup>1</sup>**, which operates infrastructure for the Swiss financial center. Is **compliant with international benchmark standards**.
- **Methodology developed in coordination with SNB** and regularly reviewed by an index commission.

1) Swiss Exchange, [https://www.six-group.com/exchanges/indices/data\\_centre/swiss\\_reference\\_rates/reference\\_rates\\_de.html](https://www.six-group.com/exchanges/indices/data_centre/swiss_reference_rates/reference_rates_de.html)

# Update on compounded SARON by SIX

- SIX intends to publish compounded SARON
- Data delivery via SIX website (csv file) covering at least the last 12 months
- As requested and according to market standards: compounded SARON will be rounded to 4 digits (e.g. -0.7351%), SARON will continue to be published with 6 digits after the decimal point
- Go live expected for 2019-H2
- Pre-requisite: feedback from NWG on calculation formula and date definitions
- Further calculations can be provided if needed

# Preferences for cash flow certainty

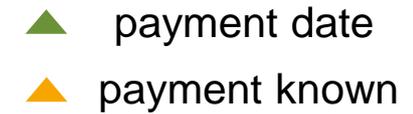


# Summary on compounded SARON loan options

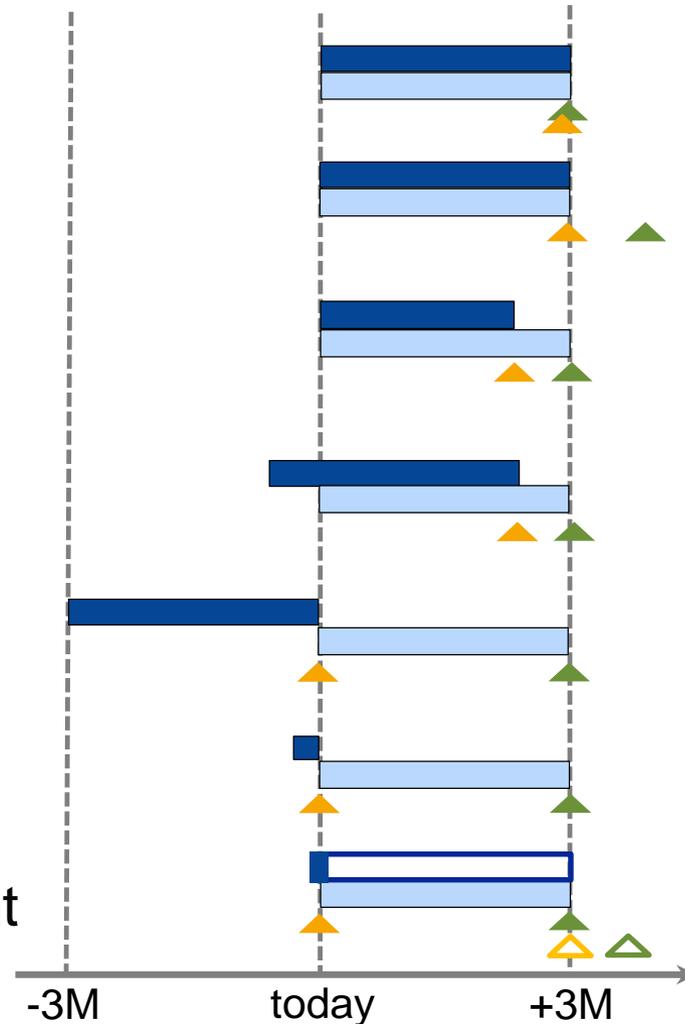
- Several options (0-6) developed, described and assessed
- Some options provide a higher cash flow certainty, but are more complex
- No recommendation for a specific option is given
- Market participants should consider and assess the options
- Financial institutions should individually define action plans with respect to their product strategy

# Options for using a compounded SARON

Each figure shows the timing of an interest rate payment



0. Base case
1. Delayed payment
2. Lockout period
3. Reset days prior
4. Period shift
5. Short period
6. Payment on account

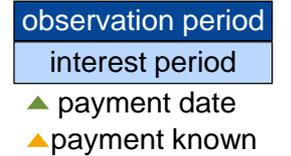
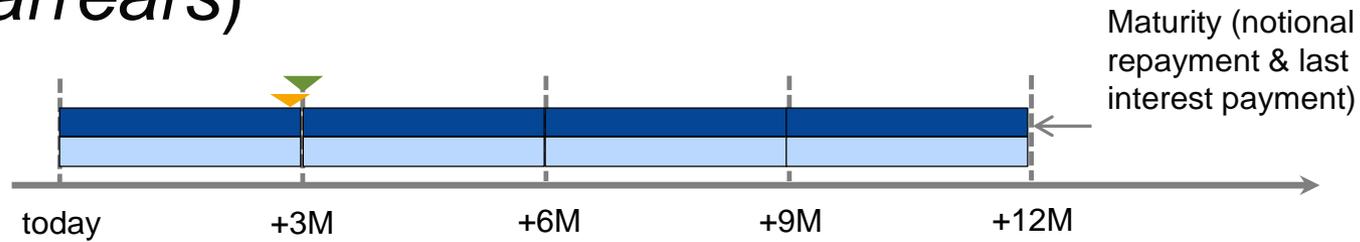


**In arrears:** Next payment is known close to the end.

**In advance:** Next payment is known at the beginning.

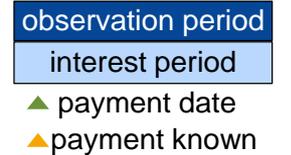
**Mixed:** part of payment known at the beginning.

# Base case (*in arrears*)

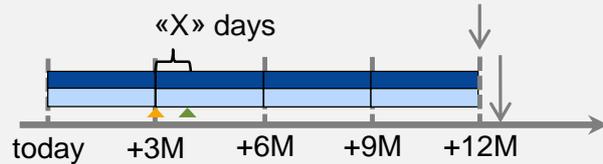


	Description
Client value proposition	<ul style="list-style-type: none"> <li>• Floating-rate loan based on SARON (6 p.m.), a robust, risk free, reliable and Swiss CHF benchmark that is compliant with international market standards</li> <li>• Transparent pricing / rollover</li> <li>• Simple product structure (compared to other product options)</li> </ul>
Client interest calculation	<ul style="list-style-type: none"> <li>• SARON compounded (resetting e.g. 3M) + contractually defined margin</li> <li>• Webpage by SIX (administrator) to verify calculation</li> </ul>
Cash flows: notional & interest rate	<ul style="list-style-type: none"> <li>• Notional: paid out at start of the contract; paid back at the end of the contract</li> <li>• Interest rate: paid at the end of each interest rate period</li> </ul>
Cash flow certainty	<ul style="list-style-type: none"> <li>• One day before the end of the interest period at 6 p.m.</li> <li>• Only indicative amount possible prior to that</li> </ul>
Risk disclosure	Interest rate risk and cash flow uncertainty should be disclosed to client
Early termination	Overnight structure allows for early termination on short notice
IR risk transfer	Possible on deal and portfolio level (cash flow mismatch as swap market uses a delay of two days)
Other	No conflict with accounting, tax and legal (for all options) identified. However, each product provider should assess individually.

# Overview of further in arrears options<sup>1</sup>

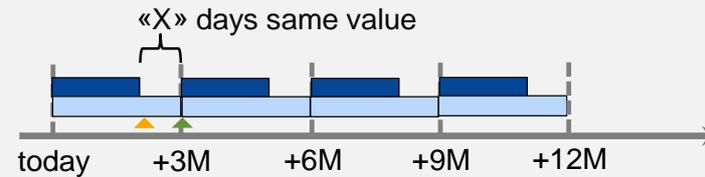


## Delayed payment



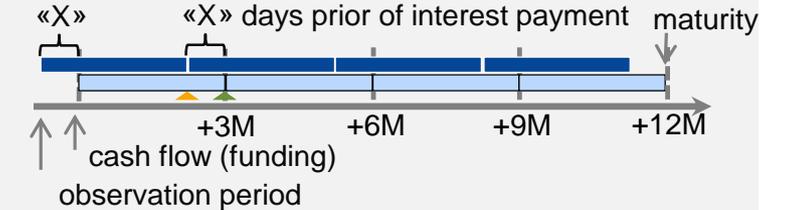
- Client payment is delayed by X days after end of interest period, to allow for better operational cash flow management
- If  $X = 2$ , the cash flow of the loan matches the interest rate cash flow of SARON swaps
- In last interest period, interest payment after payback of notional (incl. release of collateral), i.e. mismatch of cash flows and increased credit risk

## Lockout period



- Actual SARON fixings are used until X days before the end of the observation period. For the last X days, SARON is no longer refreshed (lockout period).
- Interest rate calculation becomes less transparent for clients and more complex for product providers to implement
- Slightly increased interest rate risk due to rate changes during lockout period. It can be hedged if required.

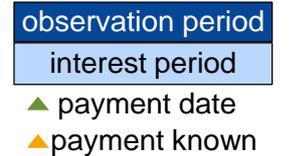
## Reset days prior



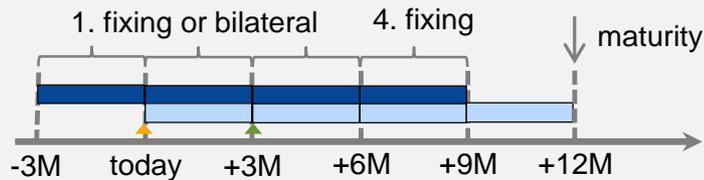
- Observation period starts and ends X days prior to the relevant interest rate period
- Slightly increased interest rate risk due to changes in the yield curve over the lifetime of the product. It can be hedged if required.

1) Please find further details regarding the options in the appendix

# Overview of in advance options<sup>1</sup>

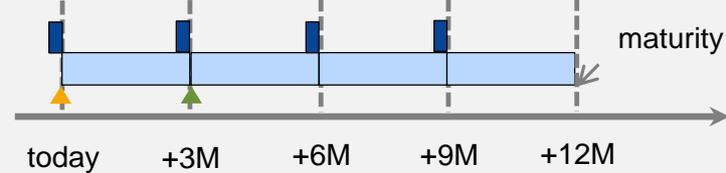


## Period shift



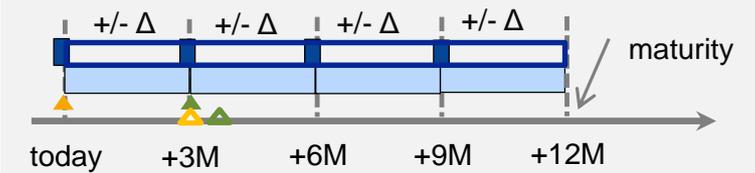
- Client payment equals SARON compounded from previous period, plus a mark-up to compensate for the missing last observation period
- Client knows cash flows at the start of each interest period
- Early termination becomes more complex as most likely some sort of compensation mechanism is needed
- Due to the period shift cash flows of swap and loan have a mismatch, which increases hedging complexity

## Short period



- SARON or X days of SARON compounded are fixed for whole interest period and paid at the end
- Client knows cash flows at the start of each interest period
- Interest rate risk cannot be hedged with currently existing instruments
- SARON is more volatile than SARON compounded

## Payment on account



- SARON or X days of compounded SARON are fixed for whole interest period and paid at the end (instalment payment)
- In addition, an adjustment payment is calculated from the delta between the instalment payment and the compounded SARON realized during the interest period and paid after the end of the interest period by either party
- Only part of interest payment known in advance
- Early termination becomes more complex as most likely some sort of compensation mechanism is needed

1) Please find further details regarding the options in the appendix

# Recommendations

- Market participants should consider and assess the options
- Financial institutions should individually define action plans with respect to their product strategy

# Next steps

The following items will be addressed in the L&D sub-working group:

- Share the presented options with other currency areas to strengthen international coordination and achieve common terminology and knowledge of compounded term rate usage
- Engage further in discussions to increase acceptance of compounded SARON
- Monitor national and international developments regarding implementation and / or usage of compounded term rates

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# SARON Floating Rate Notes

# Summary on SARON Floating Rate Notes

## Work done by the Derivatives and Capital Markets Sub Group

- Concluded on key features of an SARON FRN
- Assessed different options on how to use a compounded SARON and established a preference for “reset days prior” and “lockout period” – in that order of preferences
- Drafted key elements of a fallback language (if SARON were to discontinue)
- Confirmed feasibility with SIX and identified the need to implement only one type of interest rate provisions, i.e. reset days prior; SIX is working on the implementation
- Concluded that the offset of 5 days seems appropriate

- 
- There are no impediments to issuing SARON based FRNs
  - Exchanges are encouraged to facilitate the listing of SARON based FRNs

## Next step

- Finalize a standard for fallback language for SARON FRN

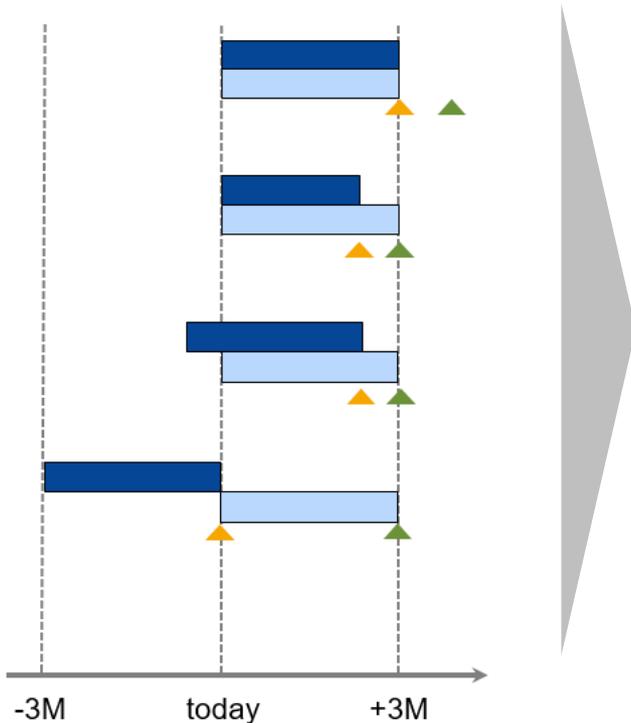
# Challenges with FRNs and ways to address them

- Coupon determination for RFR FRN (in arrears) is materially different than for IBOR FRN (in advance)
- Issuers, paying agents and exchanges require a number of days for processing between the determination of the interest rate and the payment of the coupon

## There are different approaches for interest rate provisions to address this matter

### Assessment (further details in the appendix)

1. Delayed payment: diverging dates for notional repayment and last interest rate payment (not preferred)
2. Lockout period: suffers from volatility of SARON or rate changes during the lockout period (second preference)
3. Reset days prior: suffers from volatility of yield curve, but economic impact is small and hedging is simple (first preference)
4. Period shift: complex to hedge (not preferred)



# Summary of preferred FRN provisions

## Interest rate determination

- **Reset days prior:** the advantages of this approach outweigh some of its small inherent economic drawbacks
- A **time lag between 3-5 days** is deemed to be sufficient to deal with operational matters. **5 days seem appropriate** as the weighting of weekends does not change, is also applied in other jurisdictions, and may obtain the largest operational acceptance.

## Compounding vs. weighted average

- **Compounding** (to match swap convention)

## Business day convention

- **Modified following** (to match swap & cash markets)

## Day count fraction

- **Actual/360** (to match swap & cash markets)

## Fixing time

- **18:00** (to match swap market)

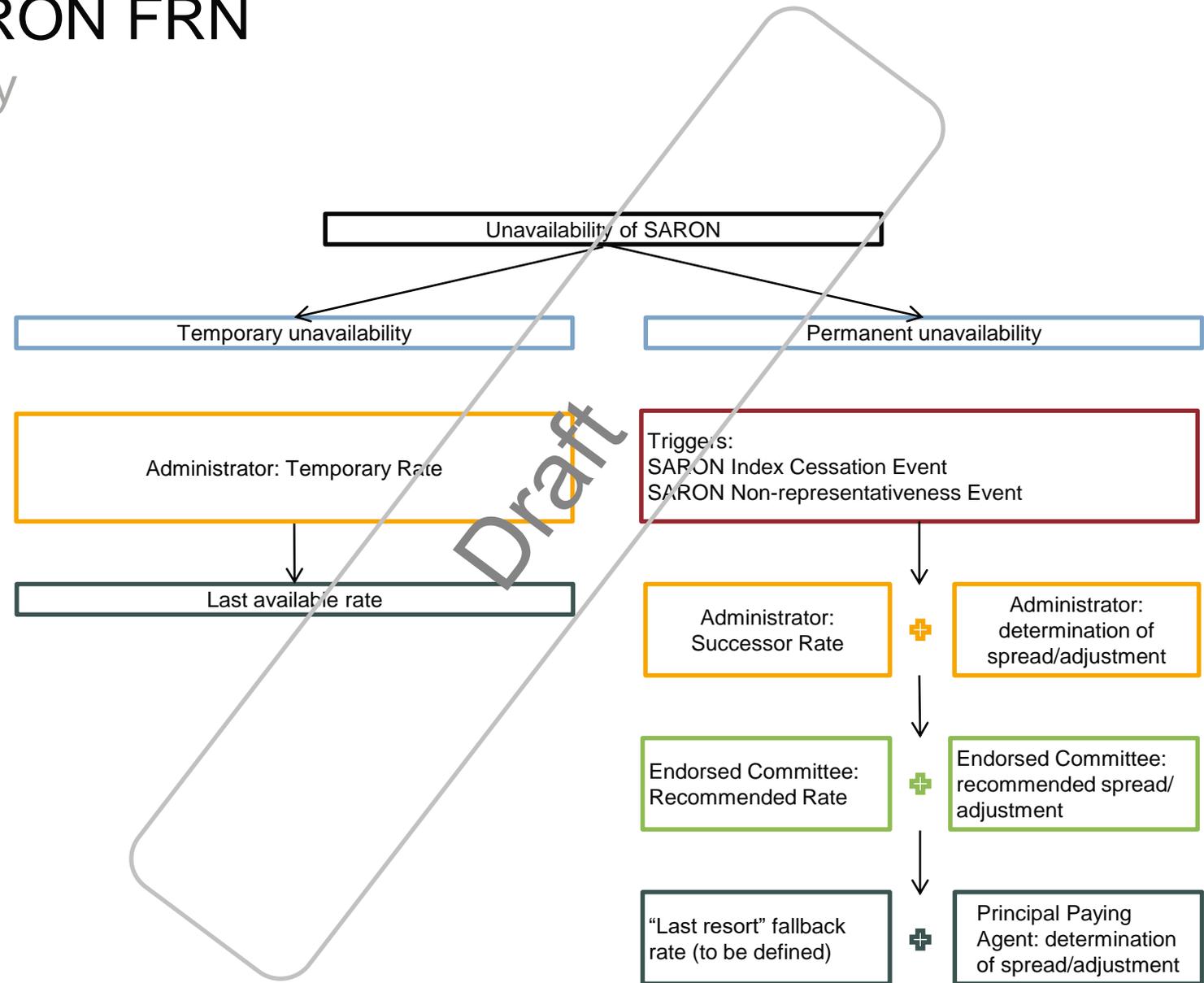
# Fallback mechanism for SARON FRN

Draft for discussion purposes only

A fallback language will be required for SARON FRNs in case SARON were to cease to exist

## Next step

Finalize a standard for fallback language for SARON FRN

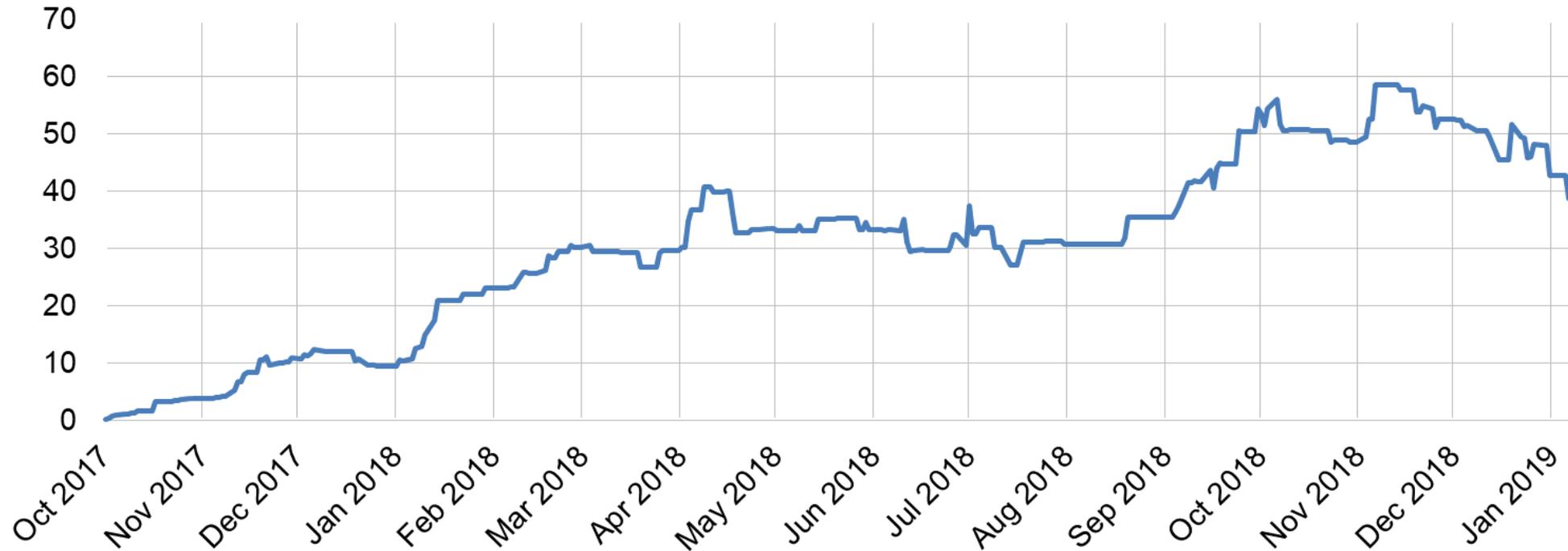


## 5. SARON-based derivatives products

# Developments in the SARON swap market

## Open interest of SARON swaps (single counting, all tenors)

CHF bn



Source: LCH

# Update from the ARRC cross-currency subgroup

- Potential **conventions** for an RFR-based dealer-to-dealer cross currency market
  - OIS markets have **differing payment lags** (e.g. T + 2 for USD and T + 1 for EUR). This means that **alignment** of dates for interest payments and daily rate sets is **not possible for many currency pairs**.
  - The subgroup felt that **alignment of payment dates should be recommended**, to avoid the credit risk that would be generated if payment dates did not align in case notional principal was exchanged.
- Potential **fallbacks** for cross-currency swaps currently referencing IBORs
  - If counterparties transition from LIBOR to RFRs they will need to decide whether to **move both benchmarks** (i.e. both legs of the swap) or just the impacted leg.
  - In the event that a given leg of a cross-currency swap referencing two IBORs permanently stopped publication or in other circumstances that the counterparties agree, **ISDA has agreed to consider offering templates** which would allow counterparties to agree that **both legs of the cross-currency swap would trigger and fallback** to the designated RFRs.

# FX swaps and FX forwards: preliminary results

## Example:

- A corporate raises CHF 3-month LIBOR funding and needs to transform to USD → typically use an FX swap/forward where the interest differential between the two currencies is reflected in the forward FX rate.
- If the firm raises 3-month SARON compounded (in arrears) funding, it will likely refrain from using a standard FX swap to transform the funding to USD, as the interest differential between the two currencies is only known at the end of the 3-month period.

**Issue:** in a SARON in arrears compounding world, you do not know the final payment at the beginning. As a result, the standard FX swap is not suitable.

### **Possible solution:**

- Either: use several swaps to (1) swap from SARON floating to CHF 3 month fixed, (2) use a standard FX swap to swap from CHF fixed to USD 3-month fixed, (3) use a SOFR OIS to swap to USD SOFR.
- Or: use a 3-month cross currency swap that swaps directly from CHF SARON to USD SOFR for three months → product still needs to be established

# Update on SARON-based caps/floors

- Caps/floors should protect the buyer against a floating rate payment above (cap) or below (floor) a certain strike
- To have an effective and efficient hedge, caps/floors should reference CHF-SARON-OIS-COMPOUND for the relevant interest rate period(s) instead of directly referencing each SARON fixing (given compounded SARON becomes the standard in cash products)
- Example:
  - A corporate takes out a 5y SARON based (in arrears, delayed payment) loan at a 2% spread
  - To hedge against interest rate payments above 5% the corporate buys a 5y cap with a 3% strike that results in the following interest rate payments:

<i>All rates: annual, act/360, modified following</i>	1y	2y	3y	4y	5y
CHF-SARON-OIS-COMPOUND 1y	1.3%	2.75%	3.25%	3.9%	3%
Payoff Cap in %	-	-	0.25%	0.9%	0%
Spread	2%	2%	2%	2%	2%
Total interest rate payable	3.3%	4.75%	5%	5%	5%

# 6. Effects on financial reporting: open issues

Barbara Seitz, Copenhagen Business School

# Summary

The accounting choice '**hedge accounting**' aims to **avoid artificial earnings volatility**, which might occur if value changes in the hedging instrument and/or hedged item are recognized in different reporting periods.

**US GAAP** and **IFRS** are influenced more by the transition from IBOR to RFR compared to **SWISS GAP FER**.

**Biggest concern:** Increase in (point-in-time) P&L volatility on transition from IBOR to RFR due to de-designation of hedge accounting relations, and subsequent use of these derivatives either absent hedge accounting or in re-designated hedge accounting relations.

**No concrete guidance** from FASB & IASB yet, but expected in due course.

# Institutional background

## IFRS (IAS 39 & IFRS 9) and US GAAP (ASC 815)

- **Two ways** to account for hedging relationships

### Fair Value Hedges (FVH)

Value changes of the hedged item are recognized in P&L symmetrically with those of the hedging instrument

### Cash Flow Hedges (CFH)

Effective value changes of the hedging instrument are parked in equity & recycled in P&L when the value changes of the hedged item affect earnings

- **Comprehensive qualification criteria** to designate hedge accounting, e.g., documentation, prospective assessment of hedge effectiveness, ‘highly probable’ hedging relationship
- Some **differences** remain between IFRS 9 and ASC 815, e.g., benchmark recognition, quantitative limits of qualification criteria, accounting for ineffectiveness
- **Implications** of the transition from IBOR to RFR for financial reporting arise in relation to valuation (amending legacy contracts, pricing gap addressed with spread adjustment, different tenors) and basis risk

## Swiss Gap Fer (FER 27)

- **Very-principle-based** set of standards (expert group, judgement)
- **Accounting of hedging instrument:** either similar to IFRS or only disclosures

# Impact of the IBOR reform on hedge accounting

	US GAAP: ASC 815 [FASB]	IFRS: IAS 39 & IFRS 9 [IASB]	Swiss Gap Fer: FER 27 [Fachkommission]
	corporates    insurances    banks	corporates    insurances    banks	corporates    insurances    banks
<b>SARON recognition</b> (in accounting regime)	In progress – ASC amendment needed (SOFR OIS included with Update 2018-16 to ASC 815)	No amendment but rate has to be proven ‘separately identifiable and reliably measurable’	No amendment but rate has to reflect market conditions (“marktgerecht”), and riskiness (“risikogerecht”)
<b>Leading up to IBOR reform</b> (Preparing old portfolio of IBOR hedging instruments in HA relationship)	‘Highly effective’ in achieving offsetting changes in fair value or cash flow requirements of hedged item and the hedging instrument	<ul style="list-style-type: none"> <li>&gt; <b>Prospective assessment</b> and the ‘highly probable’ requirements of hedged item &amp; hedging instrument</li> <li>&gt; <b>Discontinuation</b> – Either (1) keeping hedging relationships with RFR instead of IBOR, (2) discontinuation of hedge accounting, (3) de-/re-designation, or (4) modification of contractual terms</li> <li>→ What will provide most useful information to users of financial statements?</li> </ul>	No official documentation or hedging requirements but ‘ <b>common best practice</b> ’: <ul style="list-style-type: none"> <li>&gt; <b>Economic hedging</b>: Hedging instrument related to a specific hedged item</li> <li>&gt; <b>Prospective assessment</b> adequately documented</li> <li>&gt; Future transaction ‘<b>highly probable</b>’</li> </ul>
<b>On transition to RFR</b> (Adjusting old portfolio of IBOR hedging instruments in HA relationship)	<b>Increased P&amp;L volatility</b> at de-designation when fair value hedge adjustments are amortized to P&L and the cash flow hedge reserve is reclassified to P&L	<ul style="list-style-type: none"> <li>&gt; Amendments necessary to both <b>IAS 39 and IFRS 9</b> to relieve <b>discontinuation</b> (for banks: macro-hedging update of interest)</li> <li>&gt; <b>Increased P&amp;L volatility</b> when continuing to use IBOR-hedge-accounting derivatives (1) either measured at fair value through P&amp;L absent hedge accounting, or (2) re-designated with non-zero fair values (increase in hedge accounting ineffectiveness due to different mismatches in value changes of the hedged item and the hedging instrument)</li> <li>&gt; <b>Uncertain about conditions of replacement</b>, e.g., hedge accounting documentation, risk objective on contract-by-contract basis, IBOR as a non-contractual specific risk component</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Due to <b>no P&amp;L effect</b> in the FER hedge accounting model, no volatility increase expected</li> <li>&gt; Only <b>equity effect</b> and/or changes in disclosures in the notes depending on chosen accounting option</li> <li>&gt; <b>No problem with discontinuation</b>, if any</li> </ul>
<b>After transition</b> (New and updated hedging relationship with SARON hedging instruments)	<p>ASC 815.BC19-21. Relief is needed from the requirement to <b>de-/re-designate</b> as a result of a change in any of the critical terms (= change in fallback-provisions or the contractual variable rate of LIBOR-based contracts) – ‘Relief provision’ project added</p> <p>(Ineffectiveness reporting removed in ASC 815 amendment 2017-12)</p> <ul style="list-style-type: none"> <li>&gt; <b>Coexistence</b> of more benchmarks approved</li> <li>&gt; Application on a <b>prospective basis</b> for qualifying new or re-designated relations</li> </ul>	<ul style="list-style-type: none"> <li>&gt; <b>Novation</b> hedge accounting with eased rules (compare e.g., with the 2013 hedge accounting amendment)</li> <li>&gt; <b>Coexistence</b> of more benchmarks not addressed yet</li> </ul>	<ul style="list-style-type: none"> <li>&gt; <b>Coexistence</b> of more benchmarks seems to be no problem</li> </ul>

# Timeline

- 
- Jan'19**
- **Overview** of related standard setting under IFRS, US GAAP, SWISS GAP FER
  - Sent a set of **questions to the IASB**. Main topics relate to ...
    - Introduction of basis risk to the system: Interim solution in case of transition of hedging instrument and hedged item under different timelines
    - P&L volatility at discontinuation and/or de-/re-designation (if any): Potential relief
    - Timeline for an update on Macro Hedge Accounting – Dynamic Risk Management
    - A suggested 'smooth transition': LIBOR=RFR+X eligible for hedge accounting under same timeline for hedging instrument and hedged item with facilitated process to find counterparties under RFR
- Feb'19**
- Public **IASB discussion** of IBOR reform updates (**8 Feb**)
  - First draft of **summary paper**
- Q1&Q2'19**
- Get more **industry insights**: Benchmark change might have a different impact for banks, corporates, insurances e.g., due to ...
    - Size effects/ IT issues: IT deficits seem to be a main burden for corporates in the transition from IAS 39 to IFRS 9 related to hedge accounting, benchmark transition might add to that complexity
    - Differences in IAS 39 (applied by banks until 2021) vs. IFRS 9 application (by corporates) regarding for example the effectiveness testing might influence the benchmark switch
  - Updated **summary paper**

## 7. Raising awareness among infrastructure providers

# Raising awareness among infrastructure providers

- Email to infrastructure providers\* with a Swiss focus collected among NWG members
  - Inform about the LIBOR-SARON transition as well as the NWG
  - Invitation to a webinar held by the NWG on 26 February 2019
- Aim of the webinar: update interested infrastructure providers on recent NWG recommendations and in particular to elaborate options how to use compounded SARON
- Update from UK RFR WG Infrastructure Forum held on 31 January 2019

\* 360T, Avaloq, Bellin, Best Vision Service AG, Blackrock, Bloomberg CH, CENLAR, DXC Technology, Encompass, Eri Bancaire, Finacle, Finastra, Finnova, Finstar, FIS, Ibis 3G / DXC Technology, ICAP, ICE, ION, KEYINVEST, Markit, MSCI Risk Metrics, Murex, New Access, OBS (Online Banking System), Option Computers, QRM Quantitative Risk Management, Reuters, SAP, Serrala, STOMP / ITG, SWAPSWIRE EQ / HIS Markit, TCS – Tata Consultancy Services, Temenos and Trinity. **Additional nominations can be addressed to [nwg@snb.ch](mailto:nwg@snb.ch)**

# 8. Communication

# Efforts to increase awareness of LIBOR transition

- ICMA and SIX joint conference on the transition from LIBOR to SARON with contribution by NWG [1 November 2018]
- NWG information event in Geneva for stakeholders domiciled in the Swiss Romandie [9 November 2018]
- NWG information event for media representatives and subsequent media coverage [21 November 2018]
- Speech by Andréa M. Maechler, Member of the Governing Board, at SNB news conference on December monetary policy assessment [13 December 2018]
- FINMA guidance on the main risks for supervised institutions associated with the LIBOR transition [17 December 2018]
- FCA speech on LIBOR transition and contractual fallbacks [28 January 2019]

## 9. Recommendations

# Recommendations

- Regarding contractual robustness
  - Market participants should follow the international developments and give feedback to the ISDA consultation
- Regarding cash products
  - Market participants should consider and assess the options
  - Financial institutions should individually define action plans with respect to their product strategy
  - SARON FRNs:
    - Exchanges are encouraged to facilitate the listing of SARON-based FRNs
    - Market participants should consider the assessment provided



# Next steps

The following items will be addressed in the L&D sub-working group:

- Share the presented options with other currency areas to strengthen international coordination and achieve common terminology and knowledge of compounded term rate usage
- Engage further in discussions to increase acceptance of compounded SARON
- Monitor national and international developments regarding implementation and / or usage of compounded term rates

The following items will be addressed in the D&C sub-working group:

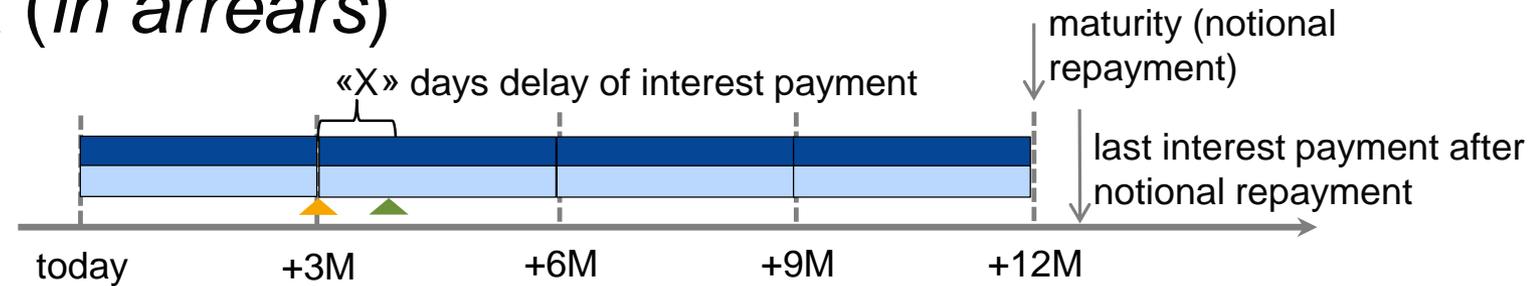
- Finalize a standard for fallback language for SARON FRN
- Continue to work on the design of SARON-based instruments, e.g. caps and floors
- Address open points regarding the effects on financial reporting with international standard setting bodies (IASB) and other currency working groups

# Next NWG meeting and publication of results

- Next NWG meeting is scheduled for 13 June 2019, 15.00 – 17.00 (CET)
- Publication of NWG's recommendations
  - Short summary of the meeting by 6 February 2019
  - Meeting minutes will be published within two weeks on NWG website

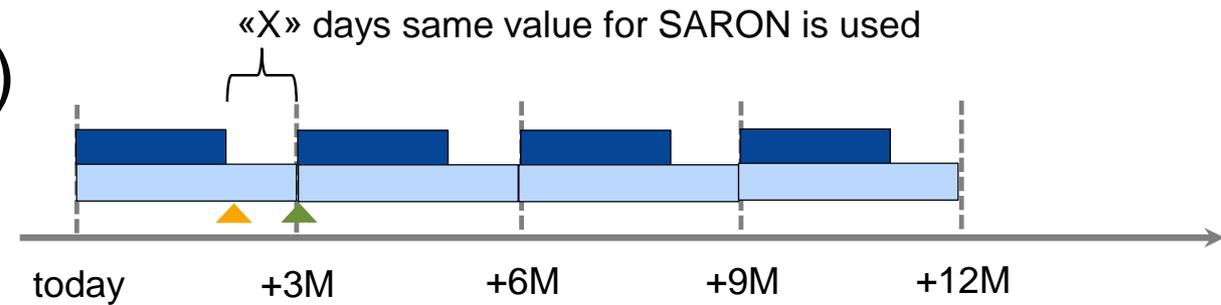


# 1. Option: Delayed payment (*in arrears*)



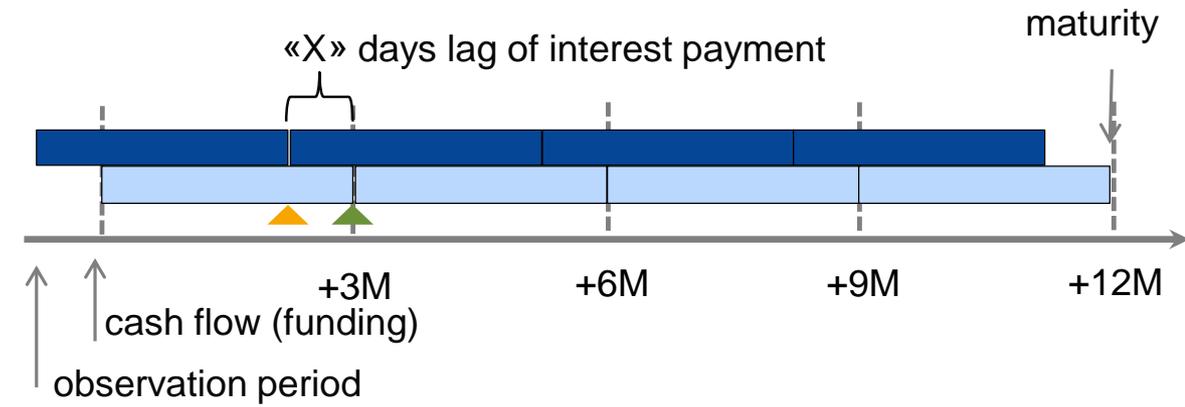
	Description
Client value proposition	<b>Easier operational cash flow management</b> for clients than in base case
Client interest calculation	SARON compounded (resetting e.g. 3M) + contractually defined margin
Cash flows: notional & interest rate	<ul style="list-style-type: none"> <li>• Notional: paid out at start of the contract; paid back at the end of the contract</li> <li>• <b>Interest rate: paid X days after interest period</b>; in the last period notional is paid back, while interest is still outstanding for X days</li> </ul>
Cash flow certainty	One day before the end of the interest period at 6 p.m.
Risk disclosure	Interest rate risk and cash flow uncertainty should be disclosed to client
Early termination	If $X = 2$ the cash flows match with the swap market
IR risk transfer	Possible
Other	<ul style="list-style-type: none"> <li>• No conflict with accounting, tax and legal (for all options) identified. However, each product provider should assess individually.</li> <li>• Potential mismatch of cash flows and increased credit risk in last interest period, i.e. payback of notional (incl. release of collateral) and last interest payment</li> </ul>

## 2. Option: Lockout period (*in arrears*)



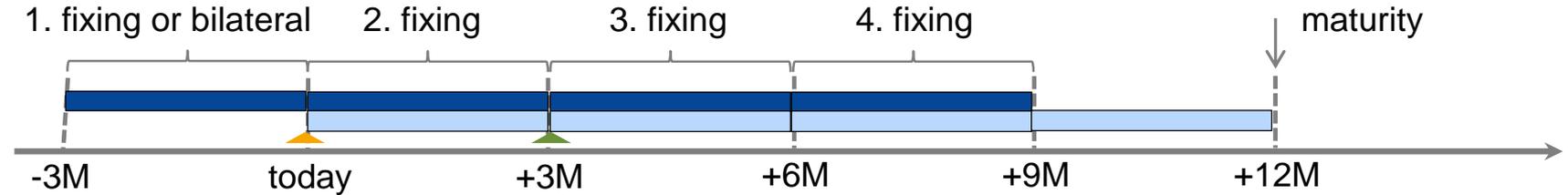
	Description
Client value proposition	<b>Easier operational cash flow management</b> for clients than in base case
Client interest calculation	<ul style="list-style-type: none"> <li>• Actual SARON fixings are used until X days before the end of the observation period. For the last X days, SARON is no longer refreshed (lockout period).</li> <li>• SARON compounded (with lockout period of X days) + contractually defined margin</li> <li>• Slightly <b>more complex</b> interest rate calculation and implementation for product providers</li> <li>• Additionally the client interest rate becomes <b>less transparent</b></li> </ul>
Cash flows: notional & interest rate	<ul style="list-style-type: none"> <li>• Notional: paid out at start of the contract; paid back at the end of the contract</li> <li>• Interest rate: paid at the end of each interest rate period</li> </ul>
Cash flow certainty	<b>X + 1 days</b> before the end of the interest period at 6 p.m.
Risk disclosure	Interest rate risk and cash flow uncertainty should be disclosed to client
Early termination	Possible
IR risk transfer	Slightly increased interest rate risk due to rate changes during lockout period. It can be hedged if required.
Other	No conflict with accounting, tax and legal (for all options) identified. However, each product provider should assess individually.

### 3. Option: Reset days prior (*in arrears*)



	Description
Client value proposition	<b>Easier operational cash flow management</b> for clients than in base case
Client interest calculation	<ul style="list-style-type: none"> <li>• SARON compounded (resetting e.g. 3M) + contractually defined margin</li> <li>• Observation period starts and ends X days prior to the relevant interest rate period</li> </ul>
Cash flows: notional & interest rate	<ul style="list-style-type: none"> <li>• Notional: paid out at start of the contract; paid back at the end of the contract</li> <li>• Interest rate: paid at the end of each interest rate period</li> </ul>
Cash flow certainty	<b>X + 1 days</b> before the end of the interest period at 6 p.m.
Risk disclosure	Interest rate risk and cash flow uncertainty should be disclosed to client
Early termination	Possible
IR risk transfer	<ul style="list-style-type: none"> <li>• If X = 2, the cash flow of the loan matches the interest rate cash flow of SARON swap</li> <li>• Slightly increased interest rate risk due to changes in the yield curve over the lifetime of the product. It can be hedged if required.</li> </ul>
Other	No conflict with accounting, tax and legal (for all options) identified. However, each product provider should assess individually.

## 4. Option: Period shift (*in advance*)



### Description

Client value proposition

**Cash flows are known at the start of each period**

Client interest calculation

- **SARON compounded (resetting e.g. 3M) from last period + mark-up + contractually defined margin**
- The mark-up (constant) is added for the convenience to have the rate «in advance»<sup>1</sup>

Cash flows: notional & interest rate

- Notional: paid out at start of the contract; paid back at the end of the contract
- Interest rate: paid at the end of each interest rate period

Cash flow certainty

**At the beginning** of each interest rate period

Risk disclosure

Interest rate risk should be disclosed to client

Early termination

Possible but more complex as most likely there is some sort of compensation mechanism needed

IR risk transfer

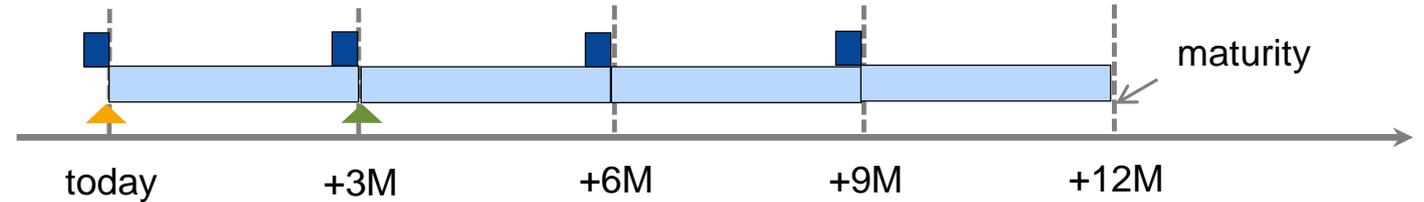
Due to the period shift cash flows of swap and loan have a mismatch, which increases hedging complexity

Other

- No conflict with accounting, tax and legal (for all options) identified. However, each product provider should assess individually.
- Basis risks can be reduced by shortening the length of the interest rate period

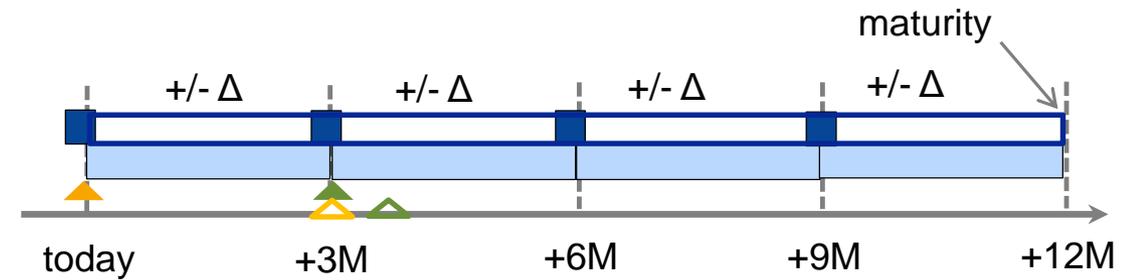
1) Please note: you can find further details regarding the mark-up in the appendix

## 5. Option: Short period (*in advance*)



	Description
Client value proposition	<b>Cash flows are known at the start of each period</b>
Client interest calculation	<b>SARON or X days of SARON compounded</b> are fixed for whole interest period + contractually defined client margin, paid at the end
Cash flows: notional & interest rate	<ul style="list-style-type: none"> <li>• Notional: paid out at start of the contract; paid back at the end of the contract</li> <li>• Interest rate: paid at the end of each chosen interest rate period</li> </ul>
Cash flow certainty	<b>At the beginning</b> of each interest rate period
Risk disclosure	Interest rate risk should be disclosed to client
Early termination	Possible
IR risk transfer	Interest rate risk cannot be hedged with currently existing instruments
Other	<ul style="list-style-type: none"> <li>• SARON itself is a lot more volatile than compounded SARON</li> <li>• No conflict with accounting, tax and legal (for all options) identified. However, each product provider should assess individually.</li> <li>• Basis risks can be reduced by shortening the length of the interest rate period</li> </ul>

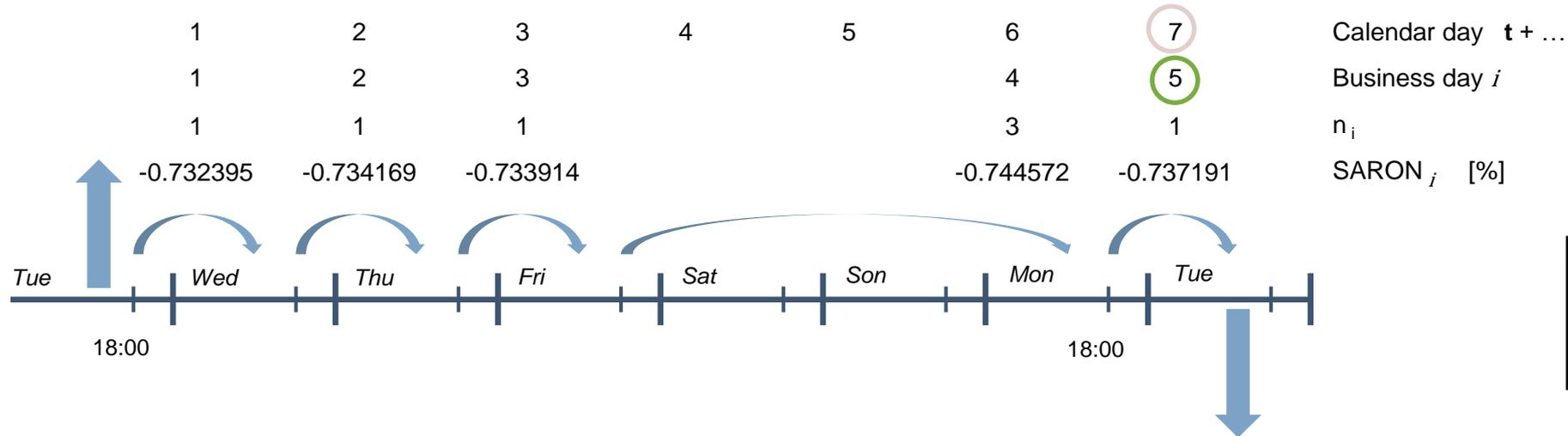
## 6. Option: Payment on account (*hybrid*)



	Description
Client value proposition	<b>Part of cash flow is already known at the start of each interest period</b>
Client interest calculation	<ul style="list-style-type: none"> <li>• <b>SARON</b> (or X days of SARON compounded) <b>are fixed for whole interest period</b> and paid at the end (<b>instalment payment</b>) + contractually defined client margin</li> <li>• <b>Adjustment payment</b> calculated from the <b>differential between the instalment payment and compounded SARON realized during the interest period</b> is paid after the end of the interest period by either party</li> </ul>
Cash flows: notional & interest rate	<ul style="list-style-type: none"> <li>• Notional: paid out at start of the contract; paid back at the end of the contract</li> <li>• Interest rate: <b>two payments</b>, instalment payment at the end and adjustment payment a few days later</li> </ul>
Cash flow certainty	<ul style="list-style-type: none"> <li>• Instalment payment known at the beginning of the period</li> <li>• Adjustment payment (delta to SARON compounded) known at the end of the period</li> </ul>
Risk disclosure	Interest rate risk and cash flow uncertainty should be disclosed to client
Early termination	Possible but more complex as most likely there is some sort of compensation mechanism needed
IR risk transfer	Possible
Other	<ul style="list-style-type: none"> <li>• If adjustment payment is delayed to the start of the next interest period, there is only one cash flow per period (fully in advance)</li> <li>• Potential mismatch of cash flows and increased credit risk in last interest period, i.e. payback of notional (incl. release of collateral) and last payment (delta)</li> <li>• No conflict with accounting, tax and legal (for all options) identified. However, each product provider should assess individually.</li> </ul>



# Calculation of SARON compounded stepwise



$$\left[ \prod_{i=1}^{d_0} \left( 1 + \frac{SARON_i \times n_i}{360} \right) - 1 \right] \times \frac{360}{d}$$

$$0.99997966 \quad 0.99997961 \quad 0.99997961$$

$$0.99997966 \times 0.99997961 \times 0.99997961$$

$$0.99993795 \quad 0.99997952$$

$$\times 0.99993795 \times 0.99997952$$

$$1 + \frac{SARON_i \times n_i}{360}$$

$$\prod \left( 1 + \frac{SARON_i \times n_i}{360} \right) = 0.99985636$$

$$\left[ \prod \left( 1 + \frac{SARON_i \times n_i}{360} \right) - 1 \right] \times \frac{360}{7} = -0.7387\%$$

# Example: one week compounded SARON (base case)

	t	SARON (6 pm Fixing)	Notional	Interest	Swap (t+2)
Wednesday, 21 November, 2018	0	-0.734169			
Thursday, 22 November, 2018	1	-0.733914			
Friday, 23 November, 2018	2	-0.744572			
Saturday, 24 November, 2018	3				
Sunday, 25 November, 2018	4				
Monday, 26 November, 2018	5	-0.737191			
Tuesday, 27 November, 2018	6	-0.735427		rate known	rate known
Wednesday, 28 November, 2018	7		cash flow	cash flow	
Thursday, 29 November, 2018	8				
Friday, 30 November, 2018	9				cash flow

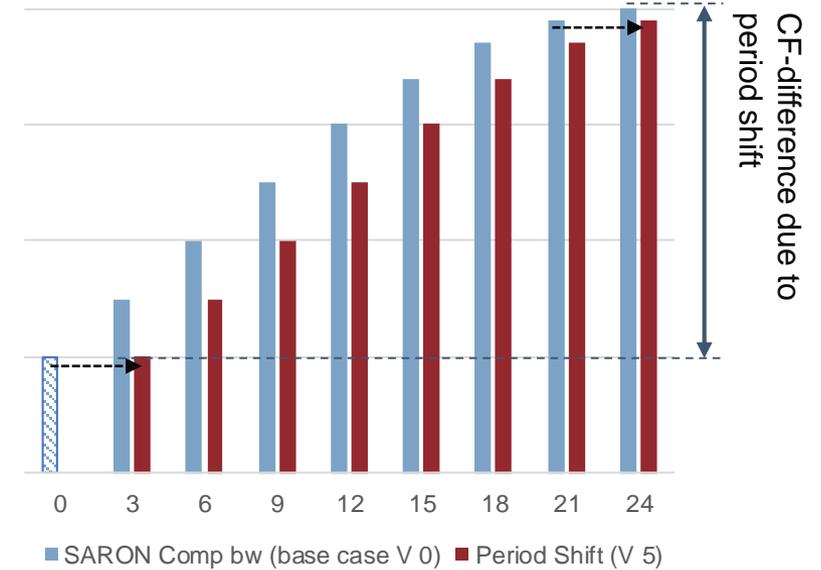
one week compounded SARON = **- 0.7392%**

$$\left[ \left( 1 + \frac{-0.734169\%}{360} \right) * \left( 1 + \frac{-0.733914\%}{360} \right) * \left( 1 + \frac{-0.744572\% * 3}{360} \right) * \left( 1 + \frac{-0.737191\%}{360} \right) * \left( 1 + \frac{-0.735427\%}{360} \right) - 1 \right] * \frac{360}{7}$$

# Background of mark-up in the option “Period shift”

## Mark-up ...

- ... is mainly driven by the term structure of forward rates,
- ... but depends also on the exact period lengths\* and discounting effects,
- ... is calculated such that the present value equals the one of the «in arrears»-option,
- ... is agreed at the beginning of the contract and remains constant,
- ... can be approximately hedged with the current derivative market (only cash flow amount, date shift cannot be hedged), and
- ... is smaller with shorter period lengths.



Example: with current market data, the mark-up for a 10 years contract with quarterly payments would be approx. 5 bp p.a.. The approximation uses the difference of the Forward OIS for the last period ( $\approx 1.25\%$ ) and the compounded SARON of the past period ( $\approx -0.75\%$ ) and divides it by the number of periods ( $\rightarrow 2\% / (10 * 4)$ ). In case of a flat yield curve (same level of Forward OIS and current compounded SARON), the mark-up would be around zero.

For an exact calculation of the mark-up, one could use the difference of the net present value to the base case.

\* Rates are shifted, not cash flows

# SARON FRN: summary of assessment

The approaches were benchmarked against the “base case (in arrears)” FRN in different rate scenarios. The base case FRN is a floating rate note that reflects SARON without observation or payment delays.

- Economically the **delayed payments** approach is closest to the swap. However, the two diverging dates for notional repayment and last interest rate payment is a major drawback. There is no consistency with RFR FRNs in other currencies.
- The main drawback of the **lockout period** is related to the volatility of SARON or rate changes during the lockout period. These risks are complex to hedge as it needs a series of different instruments.
- The main drawback of **reset days prior** is related to the volatility of the yield curve over the whole lifetime of the product. With a short lag (i.e. 4 days) the economic impact is small and hedging is simple. In contrast to the “lockout period” the volatility of SARON has little impact.
- **The period shift** offers a solution if the exact payments need to be known one period in advance, but are complex to hedge.

# SARON FRN: qualitative evaluation

**There should be uniformity of interest rate provisions for all interest rate periods.** Interest rate provisions could differ in order to accommodate for i.e. the last coupon payment date to be equal with the notional repayment date while having a payment offset for the previous interest rate periods. It may be complex to change IT systems to deal with non-uniform interest provisions. 1), 2), 3) and 4) meet this criteria.

**Ideally there would be consistency with other RFR FRNs provisions.** 1) and 4) are not consistent with RFR FRNs in other currencies.

**Collateral Management:** 1) may be operationally challenging as collateral management systems generally do not assume further cash flows after the notional repayment.

**Credit Risk Measurement:** 1) poses IT system challenges as the measurement typically assumes that there are no further cash flows after the notional repayment.

**Consistency with SARON swap – preliminary SARON basis swap conventions.** 1) is the only approach consistent with swap conventions, whereby 3) differs less than 2) from the standard. 4) differs strongly from the standard.

**Additional derivatives:** 4) requires the investor to enter into a forward starting OIS (swap starting in 57 months and ending in 60 months [57×60]) to achieve a similar economic value.

**Initial pricing process:** the pricing process is typically concluded before the start of the observation period and the determination of the margin is independent of the SARON level. Therefore, 1), 2) and 3) is unlikely to add complexity to the LIBOR FRN process. 4) requires “manual” determination of the first coupon.

# SARON FRN: quantitative evaluation – impact of rate scenarios

## Overview

The approaches were benchmarked against the “base case” FRN (option 0) in different scenarios. The base case FRN is a floating rate note that reflects the SARON rate without observation or payment delays. The quarterly interest rate is calculated one day before payment (t-1) after the last relevant 18:00 SARON fixing. Such a note if funded daily at SARON, would earn the investor exactly the margin of the note. The base case FRN is compared to the approaches 1), 2) and 3) by using a time lag of (t-4). A maturity of 5Y and quarterly payments are used.

## Results

In contrast to the quantitative evaluation in respect of the SARON volatility (next slide), the total return depends on the rate scenario. In an extreme scenario where we assume a 25 bp hike during each interest rate period over the five years, the total return of 3) is 1 bp p.a. lower than of the base case FRN. In contrast to option 3), options 1) and 2) are not affected by different rate scenarios.

## Summary

Different rate scenario have mainly an impact on option 3). The strength of the effect depends on the steepness of the yield curve. However, even in an extreme scenario with sharply rising interest rates, the impact is negligible. This is due to the assumption of a rather short time lag (4 days). Hence, the return is not very sensitive with respect to the option chosen.

# SARON FRN: quantitative evaluation – impact of SARON volatility

## Overview

The STD depicted in the figure below reflects the average mismatch for an interest rate payment based on the various approaches compared to the base case FRN. Unless no rate change occurs during the lockout period or the mismatch in the observation period, the STD is not affected by different rate scenarios. This is due to the assumption that SARON follows a staircase function. The main driver of the STD is the standard deviation of SARON. If SARON has a standard deviation of zero and no rate changes occur during the lockout period or the mismatch in the observation period, the interest rate payments of the various approaches are identical to the base case FRN. Hence, the lines below for the various STD start at zero.

## Results

The figure shows that 1) is closest to the base case FRN in terms of standard deviation. This is as 1) uses the same observation period as the base case FRN. By contrast 2) shows the highest STD, as the lockout period uses a single SARON value. 3) shows a lower STD than 2) as four SARON fixings are used for the mismatch in the observation period (t-4).

## Summary

Overall, the differences between the approaches are small in terms of standard deviations. Furthermore, in case of 3) the various mismatches compared to a base case FRN mostly cancel each other out over the whole lifetime of the FRN.

