SCHWEIZERISCHE NATIONALBANK
BANQUE NATIONALE SUISSE
BANCA NAZIONALE SVIZZERA
BANCA NAZIUNALA SVIZRA
SWISS NATIONAL BANK

Speech

Embargo
31 March 2022, 4.00 pm

Life after Libor: A new era of reference interest rates

Virtual Money Market Event

Andréa M. Maechler and Thomas Moser*

Member of the Governing Board / Alternate Member of the Governing Board
Swiss National Bank
Webcast, 31 March 2022

* The speakers thank Julia Baer, Lucas Fuhrer and Mico Loretan for their support in drafting this speech. They also thank Roman Baumann, Christoph Hirter, Cyrille Planner, Carolin Reiss, Jacqueline Thomet, Andreas Wehrli and Tanja Zehnder for valuable comments as well as SNB Language Services for the translations of the text.

Ladies and gentlemen

Good afternoon – or, depending on where in the world you are physically located today, good evening, or good morning. My colleague Thomas Moser and I welcome you warmly to the spring 2022 edition of the Swiss National Bank's semi-annual Money Market Event. The talk and subsequent panel discussion will be held in English; you may pose questions to the panellists in French and German as well. Translations of the text of the talk will be posted to the SNB's website in German, French and Italian.

Before I continue, though, let me pause and note that today, Russia's war on Ukraine entered its sixth week. My deepest condolences and heartfelt sympathies go out to the people of Ukraine and those affected by the humanitarian crisis. May the war and the immense human suffering that it inflicts end soon.

Many of you – indeed, quite likely most of you in the live audience of today's event – are aware of the fact that the era of Libor rates came to a close, for the most part, at the end of last year. With Libor's demise, a new era of reference or benchmark interest rates has begun.[1] This change represented a paradigm shift for financial markets. Managing the transition from Libor to the new reference rates – and, crucially, ensuring that everything would run smoothly – was of great importance not only for market participants but also for central banks, including the SNB. In our talk today, Thomas and I will review several salient aspects of this transition.

We will begin our talk by taking a step back, figuratively speaking, to reflect on the general importance of reference rates for a modern economy. We will also ask why and under what circumstances some interest rates either achieve or lose reference rate status. We will then note that while Libor was the key reference rate for several currencies for several decades, Libor progressively lost its reference rate status following the Global Financial Crisis of 2007 to 2009, as turnover in unsecured money markets declined and manipulations of reference rates came to light.[2] We will also discuss the main differences between the old Libor rates and the new reference rates, with an emphasis on SARON, the replacement of the Swiss franc Libor. We will conclude with a discussion of how the transition to SARON has influenced the implementation of the SNB's monetary policy.

On the central importance of reference rates for a modern economy

Let me begin by conducting a quick thought experiment. Suppose there were no reference rates in an economy. How would such an economy function? By way of example, let us consider a financial product that is quite common in Switzerland – a variable-rate mortgage with quarterly interest payments. In such a mortgage the interest payment, which is linked to a

[1] The terms 'reference rate' and 'benchmark rate' are frequently used synonymously. In our talk, we will use the term 'reference rate'.

[2] In our talk, we will focus on developments in Libor rates and will not elaborate on those in other unsecured interbank reference rates.

reference rate, is reset on a quarterly basis and may change over time.[3] A central question is: How would these quarterly interest payments be determined if there were no reference rates to rely on? The simple answer is: In the absence of reference rates, the quarterly interest rate would depend on the outcome of bilateral negotiations between the borrower, i.e. the home owner, and the lender, i.e. the bank that has financed the mortgage. Importantly, the outcome of the negotiations would hinge on the cost to the lender of continuing to fund the mortgage. This is a piece of information that is known to the lender but not to the borrower. Because of this information asymmetry, these negotiations would almost certainly be tedious and time-consuming, both for the home owner and for the bank. Moreover, these negotiations would have to be repeated every quarter over the entire lifespan of the variable-rate mortgage contract.

It is highly likely that these repeated and intransparent negotiations would deter many – possibly most – lenders and borrowers from entering into variable-rate mortgage contracts in the first place. At the very least, such negotiations would make the mortgage very expensive. This obstacle would arise not only for variable-rate mortgages, but also for virtually all other financial contracts with time-varying interest rates.[4] In short, in an economy without suitable reference rates, the financial sector would likely be both less efficient and smaller. In this sense, reference rates are central to a well-functioning financial system.

By creating transparency around funding costs, reference rates can greatly reduce the complexity of negotiations over financial contracts.[5] Chart 1 shows how reference rates are constructed in practice. Various transactions occur in a specific segment of the money market, as depicted on the left. Next, illustrated in the middle, an independent entity, generally referred to as the 'administrator', collects and aggregates the interest rates on these transactions and publishes them as a reference rate. Finally, as shown on the right, the reference rate is used in a wide array of financial products.

Reference rates are nearly ubiquitous in products such as mortgages and corporate debt at various maturities. For decades, the most important reference rate for the Swiss economy was the Swiss franc Libor. Chart 2 shows that a majority of banks employed the Swiss franc Libor, the solid yellow bars, as the main reference rate as recently as late-2020. It was only in the final quarter of last year that Libor's role was eclipsed by SARON, the solid red bars. We will return to several aspects of the transition later in our talk.

Reference rates can feature in financial contracts either directly or indirectly. For instance, in the variable-rate mortgage example I mentioned earlier, three-month Libor was frequently mentioned directly in the contractual rules that specify the interest rates. Reference rates can also be employed indirectly in products with fixed interest rates, for instance via the term structure of interest rates. If this interest rate term structure, or 'curve', is based on the swap

[3] In addition to these funding costs, other cost components, in particular a borrower-specific risk premium, would be added to determine the full quarterly interest payment. For simplicity's sake, we abstract from these considerations in this speech.

[4] Fixed-rate products would likely also be affected indirectly by the lack of reference rates.

[5] Cf. Duffie and Stein (2015).

market, it is called the 'swap curve'. The swap curve is frequently used by banks to price corporate loans and other capital market products with fixed interest rates.[6] The reference rates that were used to anchor the short end of the Swiss franc swap curve were three or six-month Libor, as is illustrated in Chart 3.[7]

Reference rates are also critically important in the transmission of monetary policy via the so-called 'interest rate channel'. For instance, if a central bank decides to ease or tighten policy, it does so by lowering or raising its policy rate and then conducting money market operations as needed to nudge market rates, including reference rates, towards the new target. In other words, changes in the monetary policy stance are reflected in reference rates. Via the expectations channel, changes in short-term rates are then transmitted to longer-term rates, such as swap rates, that are of relevance for the real economy. The more widely reference rates are used in financial products, the more rapidly a monetary policy impulse is likely to be transmitted to the real economy.

For a market interest rate to achieve reference rate status, market participants must be willing to employ this rate in financial contracts. This implies that reference rates must efficiently incorporate all relevant economic and financial market information in a manner that is both reliable and robust. Reliability requires that the collection and aggregation of the underlying data, as well as the publication of the reference rate itself, proceed according to transparent and clearly defined processes which, taken together, ensure that rates cannot be manipulated by market participants. Robustness, in turn, requires that the rates are derived from actual, observable transactions undertaken in a market that is deep and liquid and therefore represents actual funding conditions. The better a reference rate satisfies the criteria of reliability and robustness, the greater its role in the financial system is likely to be.[8]

Let me condense these general thoughts into two main points. First, reference rates help streamline and organise vast quantities of market-relevant information about funding conditions into a single, publicly available rate. This, in turn, greatly reduces transaction costs, especially negotiation costs, in financial markets. Second, reference rates must be generated in a manner that is both reliable and robust. If either ingredient is missing, the rate can lose its reference status.

The rise and fall of Libor as a reference rate

Beginning in the 1970s, during a prolonged period of rapid, global growth of financial markets, the need for reference rates emerged in various currencies and products. The reference rate system that established itself was Libor, an acronym for London interbank offered rate. Libor was remarkably efficient and simple, as it was calculated on the basis of

[6] The swap curve is particularly relevant for the Swiss franc capital market. This is because alternative yield curves, such as the government bond curve, which are typically used in other currencies, are not sufficiently liquid in Swiss francs to allow them to serve as a pricing reference.

[7] In other currencies, three-month Libor was generally used as the anchor.

[8] Cf. Brändli, Guggenheim and Jüttner (2016); Nakaso (2013); IOSCO (2013).

the reports of a panel of global banks regarding the interest rate at which they could borrow funds in the unsecured interbank market. For a long time, Libor accurately reflected conditions in the unsecured interbank money markets, and it was generally held to be both reliable and robust. For these reasons, Libor rates were used, for several decades, to price a wide variety of financial products.

The Global Financial Crisis of 2007 to 2009 had many long-lasting effects on the world's financial institutions and systems. One of them is particularly important for the topic of today's talk: the recognition that banks needed to better understand and manage their counterparty and liquidity risks, including their exposures to other banks. As a result, there was a shift, on a global scale, away from arranging interbank loans mainly on an unsecured basis towards arranging them predominantly on a secured, or collateralised, basis. The subsequent decline in trading activity in the unsecured interbank segment manifested itself rapidly, especially in the Swiss franc money market.[9]

With fewer and fewer unsecured interbank transactions occurring, the economic information content – and hence the robustness – of Libor declined, to the point that published Libor rates were increasingly based solely on so-called 'expert judgment'. As shown in Chart 4, by 2019 the calculation basis for the Swiss franc Libor rates – the red columns on the left – consisted exclusively of expert judgment, at all horizons. This dependence on expert judgment was not unique to the Swiss franc Libor. For instance, by 2019, all US dollar Libor rates with the exception of the overnight rate – the first column on the right – relied heavily on expert judgment.

Starting in 2008, news broke that some interest rate traders had managed to manipulate certain Libor rates.[10] This news triggered investigations by the authorities, which subsequently confirmed these manipulations and imposed sizable fines. This drew considerable public attention and severely damaged the public's trust in the reliability and robustness of Libor. Following these news, several attempts were made to re-establish trust in the reliability and robustness of reference rates. In 2013, the International Organization of Securities Commissions (IOSCO) proposed a set of principles that reference rates should satisfy. Separately, in 2014 the Financial Stability Board (FSB) recommended considering two reform approaches. The first focused on strengthening the existing reference rates, such as Libor. The second aimed at developing alternative reference rates.[11]

For several years, substantial efforts were made to pursue both approaches. Over time, however, it became evident that trading volumes in the unsecured segment of interbank money markets would not recover. In light of these developments, Libor's regulator, the Financial Conduct Authority (FCA), announced in July 2017 that it would no longer require banks to provide the underlying data needed to calculate Libor after the end of 2021. This

[9] Cf. Guggenheim, Kraenzlin and Schumacher (2011).

[10] Cf. Mollenkamp (2008) and Mollenkamp and Whitehouse (2008).

[11] To be precise, the FSB (2014) recommended identifying alternative, near risk-free reference rates, as market participants had expressed an interest in using reference rates that do not contain a credit risk component.

event is marked with a blue ellipse in the left-hand part of Chart 5. In March 2021, as highlighted with the second blue ellipse further to the right, the FCA and the Libor administrator issued statements confirming that Libor would be discontinued for most currencies at the end of 2021.[12]

Given the huge importance of reference rates we set forth earlier, intensive work was required to replace Libor with viable alternatives. For the Swiss franc case, a suitable alternative to Swiss franc Libor was actually readily available: SARON. The acronym SARON is short for Swiss average rate overnight. SARON was developed jointly by the SNB and SIX Swiss Exchange and was first introduced in 2009. SARON is based on activity in the overnight repo market, which is by far the most liquid segment of the entire Swiss franc money market, and it is calculated on the basis of actual transactions and binding quotes. This calculation, and its subsequent publication, is performed by the administrator, SIX Index Ltd. Because SARON is determined in conformance with the IOSCO principles to ensure both reliability and robustness, it can credibly serve as a reference rate. Methodological aspects of SARON are reviewed at least annually by an Index Commission, which may suggest changes if they are deemed necessary to ensure SARON's continued reliability and robustness.

Authorities and market participants in Libor currencies established working groups to help operationalise and implement the Libor transition – a mammoth task. In Switzerland, the National Working Group on Swiss Franc Reference Rates – NWG for short – was the key forum that shaped and guided the transition from Swiss franc Libor to SARON. The expert work of the NWG members was essential in bringing the transition to a successful conclusion at the end of 2021. SARON has now fully replaced the Swiss franc Libor as the Swiss franc reference rate, both conceptually and operationally. The NWG therefore disbanded itself as of the end of the first quarter of 2022, i.e. today.

We wish to take this opportunity to express our deep appreciation to everyone who has contributed to the NWG's work programme, and especially to the two co-chairs, Martin Bardenhewer of Zürcher Kantonalbank and Marcel Zimmermann of the SNB. As you may already have gleaned from today's programme, both Martin and Marcel have agreed to participate in the panel discussion that follows our talk. We are very much looking forward to hearing their comments and observations on the crucial role the NWG played in the transition process.

In retrospect, two factors were essential for smoothing the way to a successful and complete transition.

- First, the NWG made and communicated critically important recommendations early on. In particular, as highlighted by the red ellipses in Chart 5, the NWG formally recommended SARON as the successor to Swiss franc Libor in October 2017. One year later, in October 2018, it recommended a term rate alternative which is calculated on the basis of daily

[12] The FCA also announced that a few Libor fixings would be continued for a limited time after 2021, either in the form of a synthetic Libor (pound sterling and yen) or for certain settings only (US dollar), to enable the smooth wind-down of 'tough' legacy contracts.

SARON rates. This gave all affected market participants enough time to prepare for the end of Swiss franc Libor. The transition from Swiss franc Libor to SARON advanced rapidly in loan and deposit products, the so-called 'cash market'. Since mid-2021, new business in the cash market has been almost exclusively SARON-based. By contrast, the transition in the interest rate derivatives market progressed more slowly. Even so, trading volume in SARON swaps did pick up noticeably in the second half of 2021, and the SARON swap curve has become the sole price reference for capital and loan market products.

- Second, over the years, the private and public-sector representatives in the NWG worked very closely together. This was, for example, reflected in the fact that the NWG was co-chaired by a representative from the private sector and a representative from the SNB. The contributions of the public-sector representatives helped foster market acceptance and thus strongly encouraged the proactive implementation of the NWG's recommendations by market participants. The SNB led the technical secretariat of the NWG. We also worked closely with the official sector representatives of the other currency areas to establish and coordinate reform efforts, and we communicated regularly and through various channels about the progress being made in the transition to raise awareness among experts and the general public.

Reference rates have become heterogeneous

The switch from Swiss franc Libor to SARON, and to new reference rates in other currencies, has entailed far more than just swapping out one reference rate for another. Indeed, market practices have had to adjust because the new reference rates differ in two important respects from those of the Libor world. First, the new reference rates are heterogeneous at the global level. Second, they are all based on the cost of overnight funds. Therefore, new methods for generating term reference rates have also had to be created and adopted in currency areas without other term rates. Let me discuss these two key changes in more detail and outline their implications for market practices.

With Libor, reference rates were generated uniformly across currencies and terms. Libor rates employed standardised calculation methods for these currencies, and the data were collected from banks only. In contrast, the new reference rates are heterogeneous across currency areas, owing to both their collateral requirements – some are secured while others are unsecured – and the types of institutions that participate in the underlying money market segments, which can be banks as well as non-banks.

Several characteristics of the new reference rates are illustrated in Chart 6. The first type of heterogeneity distinguishes between secured and unsecured rates; those that are secured are located inside the blue circle. The new secured reference rates are in US dollars (Secured Overnight Financing Rate, SOFR) and Swiss francs (SARON). By contrast, the new unsecured reference rates are in euros (Euro Short-Term Rate, €STR), pound sterling (Sterling Overnight Index Average, SONIA), and yen (Tokyo Overnight Average Rate, TONA). The reference rates based on secured or unsecured money markets may embody different

premiums – or at least, reflect them to different extents. For example, secured reference rates may at times reflect fluctuations in the price of the underlying collateral, the so-called 'collateral scarcity premium'.[13] Conversely, changes in counterparty risks could cause fluctuations in unsecured money market rates, especially at longer horizons.

The second type of heterogeneity arises from differences in the type of participating institutions. Inclusion in the red circle in Chart 6 indicates that the data that underlie the rate calculations are not limited to interbank transactions only. Instead, they may now also include transactions undertaken by non-bank entities, such as insurance companies and large corporates.[14] Because non-banks typically do not have access to the central bank's deposit facility, they deposit liquidity with commercial banks. These banks would accept such funds only if the interest rate they pay were at least slightly below the central bank deposit rate that they receive. As a result of this institutional aspect, the reference rate could be systematically lower than the central bank's deposit facility rate.

Given this heterogeneity, market participants must learn how the characteristics of the various new reference rates may play out in practice in order to correctly interpret rate fluctuations across currencies and markets.

From term rates to overnight rates – and back

As noted earlier, the transition from Libor to the new reference rates also brought about a switch from term rates to overnight rates. This switch has generally improved the robustness of the reference rates, as the overnight segment is the most liquid part of the respective money market. This, in turn, is partly due to the fact that overnight rates entail very little credit or other counterparty risk – even if they are unsecured – compared to term Libor rates. From the point of view of borrowers, it is advantageous to use products based on a reference rate that does not contain a credit risk component. This became apparent during the Global Financial Crisis, when Libor rates soared as markets became concerned about the health of the banking sector.

One aspect of Libor's simplicity was that it allowed the direct use of term reference rates in the pricing of credit products; consequently, the interest payment for a Libor-based mortgage with quarterly interest payments was always known at the beginning of each period. This can be seen on the left-hand side of Chart 7. This is no longer necessarily true when using an overnight reference rate. Indeed, suitable methods must be devised to construct term rates. The three main methods are the use of actually transacted term rates, the use of a term rate that is derived from interest rate swaps, and a method that involves the compounding of a sequence of overnight rates.

[13] This premium reflects the fact that the price of obtaining collateral can vary over time. Typically, this premium is particularly pronounced at quarter-ends and year-ends.

[14] SARON is based on transactions in the overnight segment of the Swiss franc repo market, where interbank activity predominates.

For the Swiss franc market, the NWG deemed that, due to liquidity considerations, the compounding method was the only viable option.[15] The compounded SARON rate is obtained by compounding a sequence of daily SARON rates. This is illustrated on the right-hand side of Chart 7. The compounding itself can be carried out in several ways, leading to differences regarding the point in time at which the interest payment is known. Importantly, if a compounded SARON approach is used, the interest payment need not be known at the beginning of each period. On the one hand, it is possible to implement a compounded SARON such that interest payments are known at the beginning of the period – so-called 'in advance' methods. On the other hand, if the interest payment is only known at the end of the period, the respective methods are called 'in arrears'.

The provider of a loan may choose one of several possible compounding methods in order to align the properties of a product with the needs of individual clients and of the bank itself. Some clients may prefer to know the interest rate they have to pay ex ante, whereas for others it may be acceptable to know the interest rate ex post. While the various compounding methods allow banks to accommodate individual clients' preferences regarding the point in time at which the interest payment is known, the absence of a directly observable term reference rate has increased complexity regarding the ways in which reference rates are used in credit markets. In sum, market practices in the cash market have had to adapt as interest payments are no longer necessarily known at the beginning of a contract period.[16] It is reassuring that they have adapted successfully.

How did the end of the Libor era affect the SNB?

The transition to SARON affected the work of the SNB in two separate ways. First, the transition required the SNB to adjust parts of its monetary policy strategy and the way it communicates its monetary policy decisions. Second, it had implications for how monetary policy is implemented.

The SNB's monetary policy strategy comprises three elements: a definition of price stability, a conditional inflation forecast, and an operational target for money market rates. Starting in the year 2000, when the SNB introduced its then-new interest rate-based monetary policy strategy, it used a target range for the three-month Swiss franc Libor as its operational target. In June 2019, the likely demise of Libor prompted the SNB to announce a slight adjustment to its monetary policy strategy. Specifically, it replaced the target range for the three-month Libor with the newly introduced 'SNB policy rate'. Since mid-2019, the SNB has been using the SNB policy rate to communicate the desired level of secured short-term money market rates. We also announced in June 2019 that we regard SARON as the most representative secured short-term Swiss franc money market rate. In Chart 8, the old system – with a target

[15] The NWG judged that the underlying markets of the two other options were not sufficiently deep and liquid to enable the reliable and robust calculation of term rates.

[16] In contrast, the need to adapt was smaller in derivatives markets as compounded interest rates were already being used in overnight index swaps.

range for the three-month Swiss franc Libor – is shown on the left, and the SNB policy rate is shown on the right.

The SNB operates exclusively in the secured money market, by conducting repo transactions. Before the introduction of the SNB policy rate in 2019, the SNB steered the unsecured three-month Libor through transactions in the repo market. Moreover, the SNB's transactions in the repo market had a much shorter maturity – usually one week – than the three-month Libor it steered. Thus, when setting the conditions of its repo transactions, the SNB had to take into account both the credit risk premium present in the unsecured money market and the difference between its own one-week repo rate and the three-month Libor. Since the change in the monetary policy strategy went into effect in mid-2019, these considerations have faded as our monetary policy implementation is focused on keeping secured short-term money market rates close to the SNB policy rate.

The details of how the SNB implements its interest rate policy when both its policy rate and money market interest rates are negative were the subject of a talk Thomas and I held just over a year ago, at the SNB's November 2020 Money Market Event.[17] To summarise some of the main points of that talk: We showed that the SNB can influence SARON both directly, by placing quotes in the overnight segment of the repo market – so-called 'fine-tuning operations' – and indirectly, by conducting repo auctions with longer maturities. In Chart 9, the fine-tuning operations are depicted as yellow diamonds. The SNB can use liquidity-providing fine-tuning operations to cap upward spikes in SARON. The liquidity-providing repo auctions, depicted as red circles in the chart, reduce demand for overnight funds, which in turn limits upward pressure on SARON. In addition, we noted in our talk that if the SNB policy rate is negative, the main mechanism for keeping SARON close to the SNB policy rate lies in ensuring that a sufficient amount of aggregate reserves is subject to the negative interest rate.[18] One of the main takeaways from this chart is that SARON, the solid black line, usually lies within a few basis points of the SNB policy rate.

It is also worth highlighting that the SNB's operational setup differs significantly from that of most other central banks in one important institutional aspect: We conduct our monetary policy operations on the same infrastructure that banks and other market participants employ when they conduct their repo transactions. Hence, the SNB and market participants use the same trading platform for their secured transactions. This has the advantage that the SNB can transact directly with all relevant counterparties when it conducts its monetary policy operations. As we noted earlier, both actual transactions conducted and binding quotes posted in the overnight segment on this trading platform provide the basis for calculating SARON. The SNB's own money market operations are excluded from these calculations. Thus, when participants in the secured overnight segment of the Swiss franc money market trade with the

[17] Maechler and Moser (2020).

[18] In our talk, we further demonstrated that it suffices to charge negative interest rates on only a portion of aggregate bank reserves. The SNB has therefore granted bank-specific exemptions since January 2015, when it first introduced a negative policy rate, and it has increased the threshold twice since then in order to limit the burden of negative interest rates on the banking system as a whole.

SNB instead of with other market participants, the volume of trades conducted among the private-sector entities decreases, leading to a smaller calculation basis for SARON and hence, potentially, to a reduction in its information content and robustness. To reduce our footprint on the calculation basis for SARON, we implement our monetary policy by operating in other maturity segments of the money market as well.

Concluding remarks

Ladies and gentlemen, let me summarise today's talk as follows. Libor was a highly successful reference rate for several decades. However, following the Global Financial Crisis, Libor increasingly failed to satisfy the requirements for reference rate status, and new reference rates therefore had to be devised. For the Swiss franc, a new era has begun following the demise of Libor in December 2021. Thanks to the substantial efforts made by both the private and the public sector, the transition to SARON was smooth and successful. Available indicators suggest that Swiss franc markets have managed the transition very well. Happily, there is life after Libor.

The cooperative spirit that characterised the NWG's work will hopefully continue to guide the actions of all SARON stakeholders regarding the calculation of the reference rate by the administrator, the evolution of the money market infrastructure, and banks' trading behaviour in the money market. It is now up to the market participants themselves to maintain and raise the attractiveness of the new reference rates, by participating actively in the market and by taking actions that support trust in the reliability and robustness of the reference rates.

References

Brändli, B., Guggenheim, B. and Jüttner, M. (2016), Financial benchmarks: Bedeutung, Problematik und regulatorische Ansätze. Schweizerische Zeitschrift für Wirtschafts- und Finanzmarktrecht, 2, pp. 162-169.

Duffie, D. and Stein, J. C. (2015), Reforming LIBOR and other financial market benchmarks. Journal of Economic Perspectives, 29(2), pp. 191-212.

Financial Stability Board (2014), Reforming major interest rate benchmarks.

Guggenheim, B., Kraenzlin, S. and Schumacher, S. (2011), Exploring an uncharted market: evidence on the unsecured Swiss franc money market. Working Paper No. 2011-05, Swiss National Bank.

International Organization of Securities Commissions (2013), Principles for financial benchmarks. Final Report.

Maechler, A. M. and Moser, T. (2020), Monetary policy implementation: How to steer interest rates in negative territory. SNB Money Market Event, 5 November 2020.

Mollenkamp, C. (2008), Bankers cast doubt on key rate amid crisis. Wall Street Journal, 16 April 2008.

Mollenkamp, C. and Whitehouse, M. (2008), Study casts doubt on key rate. Wall Street Journal, 29 May 2008.

Nakaso, H. (2013), Towards better reference rates practices: A central bank perspective. Working Group Report, Bank for International Settlements.

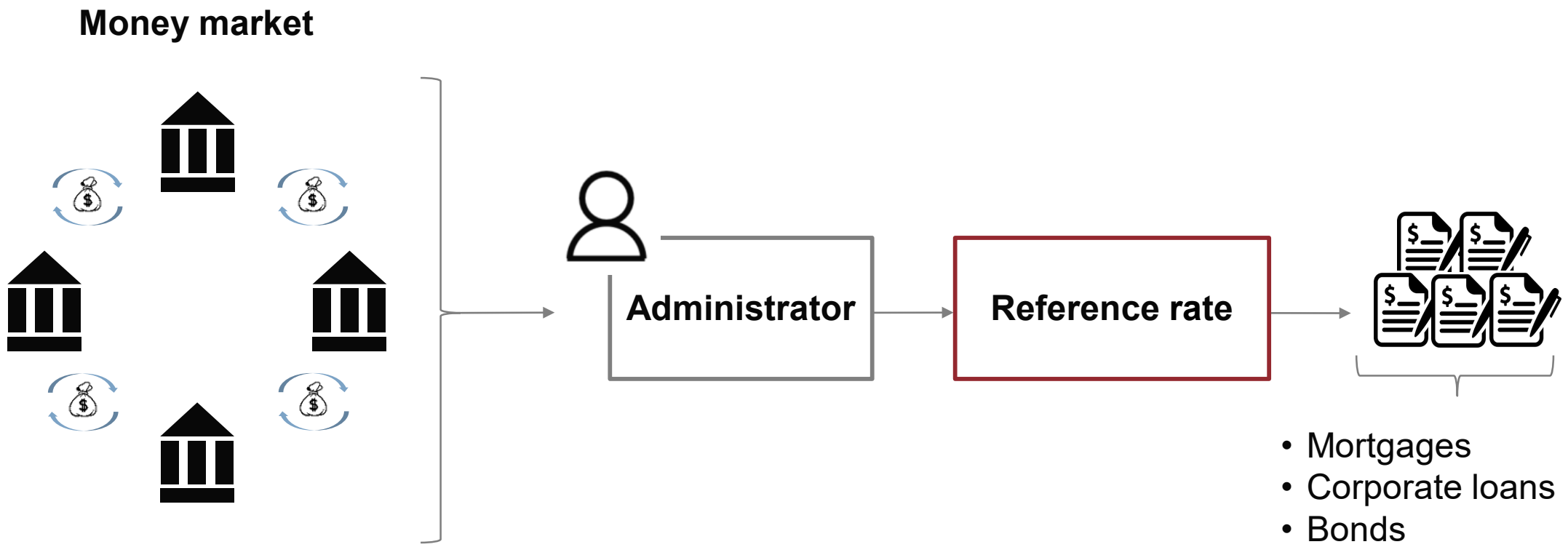
Life after Libor:
A new era of reference interest rates

Andréa M. Maechler, Member of the Governing Board
Thomas Moser, Alternate Member of the Governing Board
Swiss National Bank

Virtual Money Market Event, 31 March 2022

SCHWEIZERISCHE NATIONALBANK
BANQUE NATIONALE SUISSE
BANCA NAZIONALE SVIZZERA
BANCA NAZIUNALA SVIZRA
SWISS NATIONAL BANK

Process of constructing reference rates

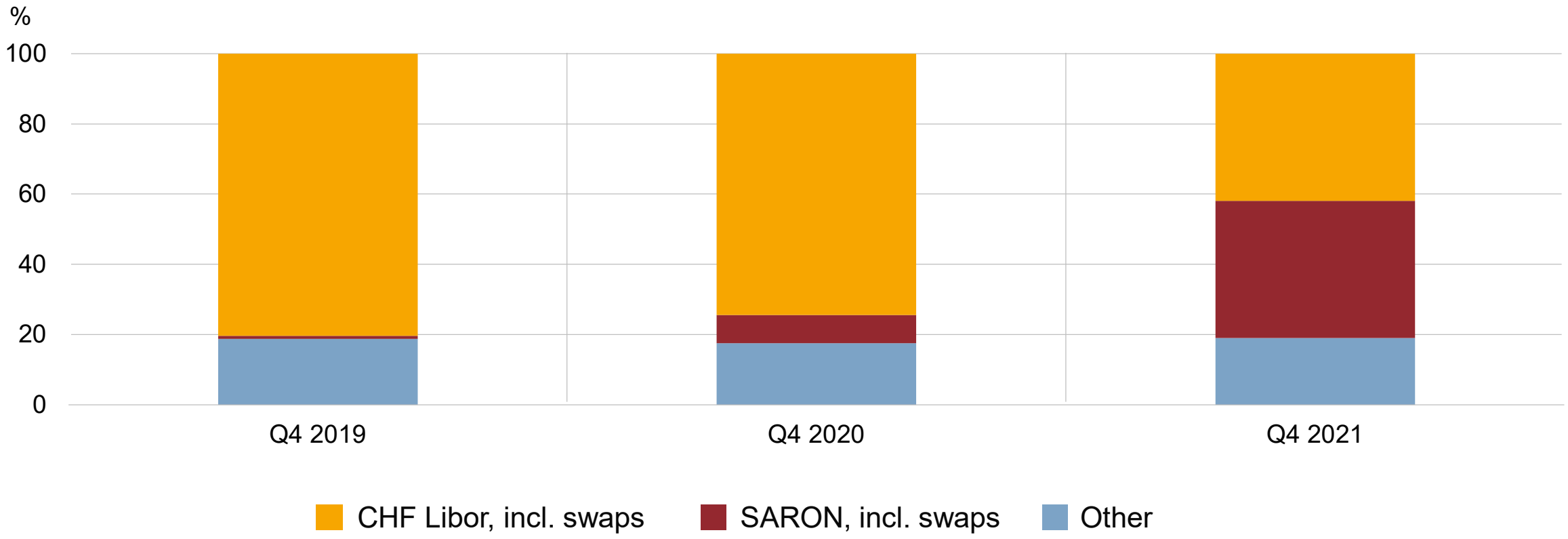


Source(s): SNB

Swiss franc Libor was predominant reference rate

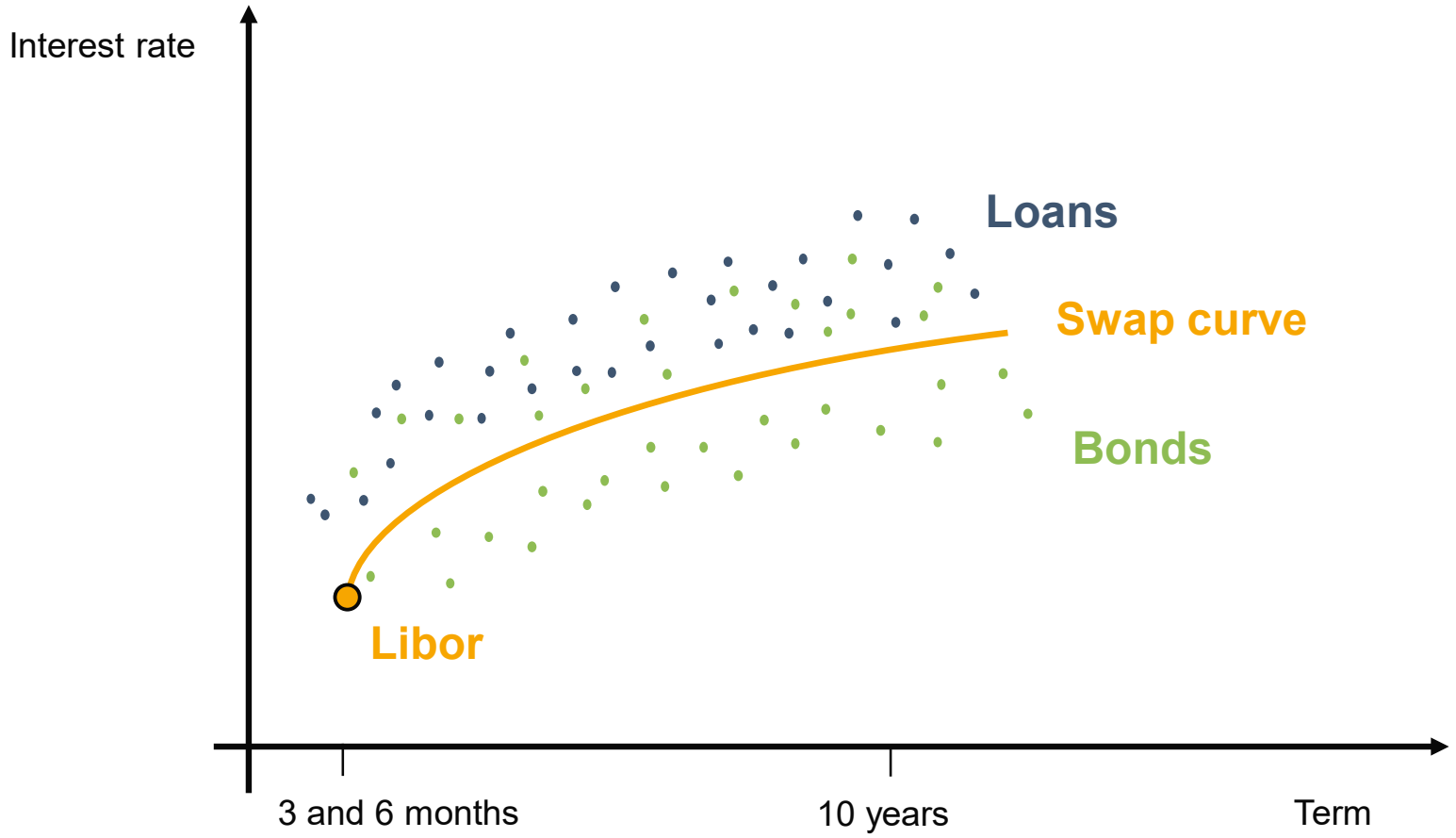
USE OF REFERENCE RATES IN LOAN PRICING

Share of banks using rate (in %)



Source(s): SNB, Bank Lending Survey

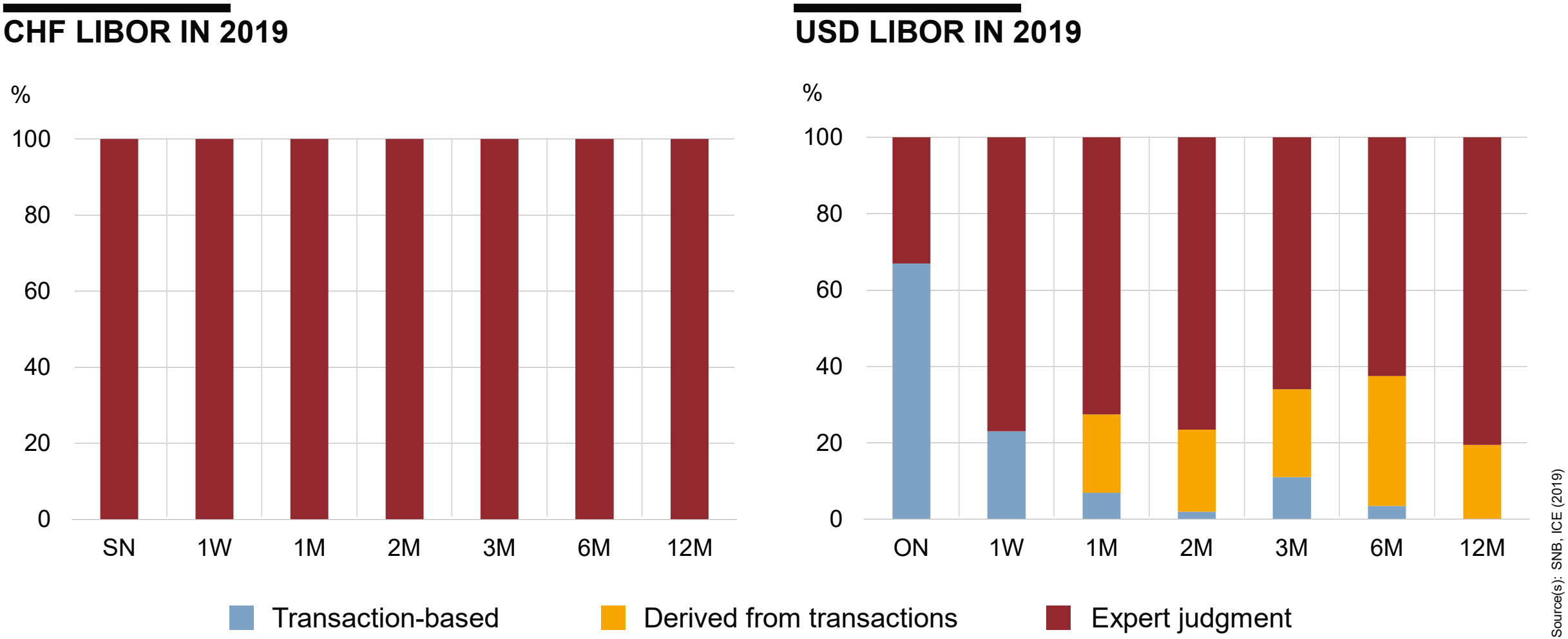
Libor was anchor of swap curve



Source(s): SNB

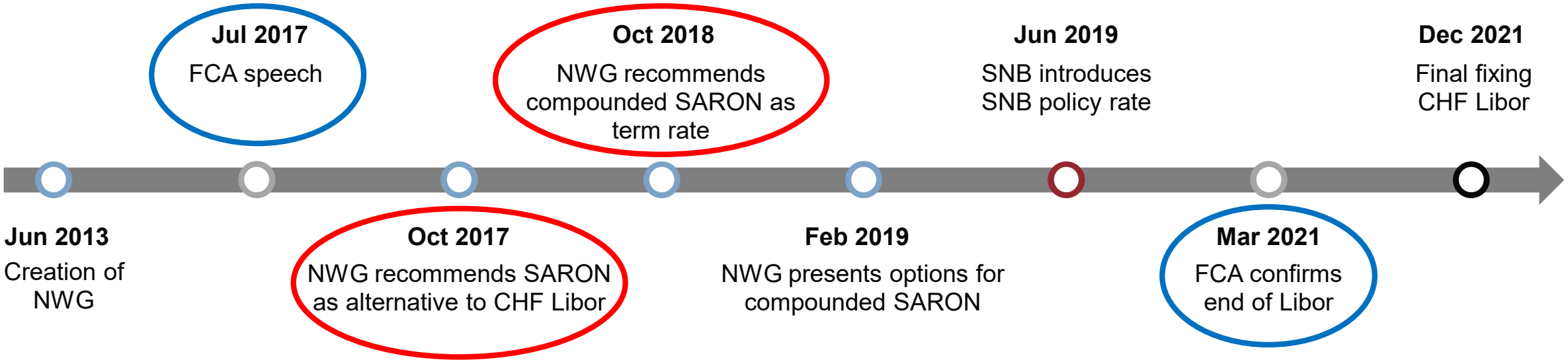
Chart 4

Concerns about robustness of Libor, as calculation basis almost entirely based on expert judgment



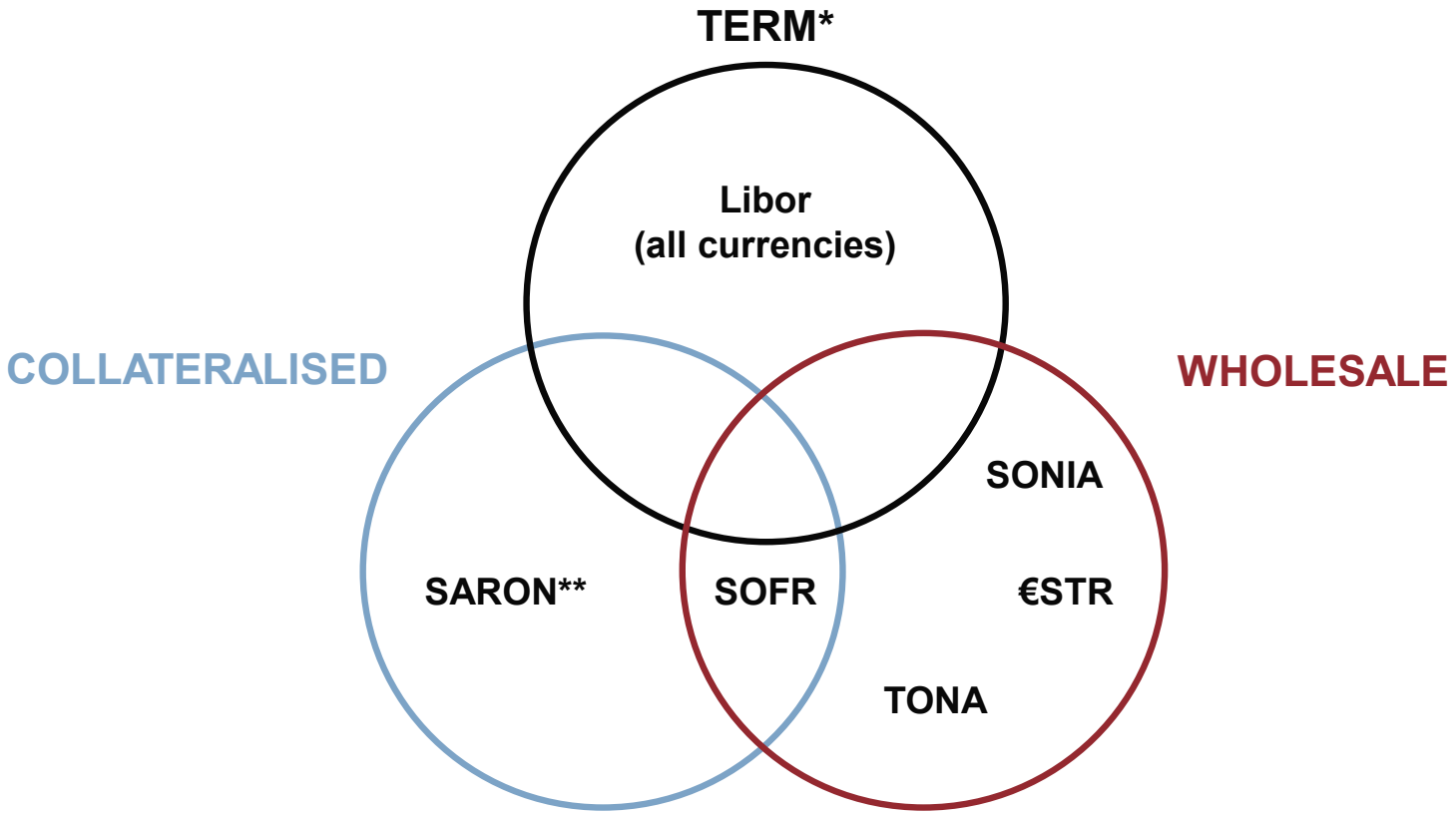
Source(s): SNB, ICE (2019)

Key steps in transition from Swiss franc Libor to SARON



Source(s): SNB

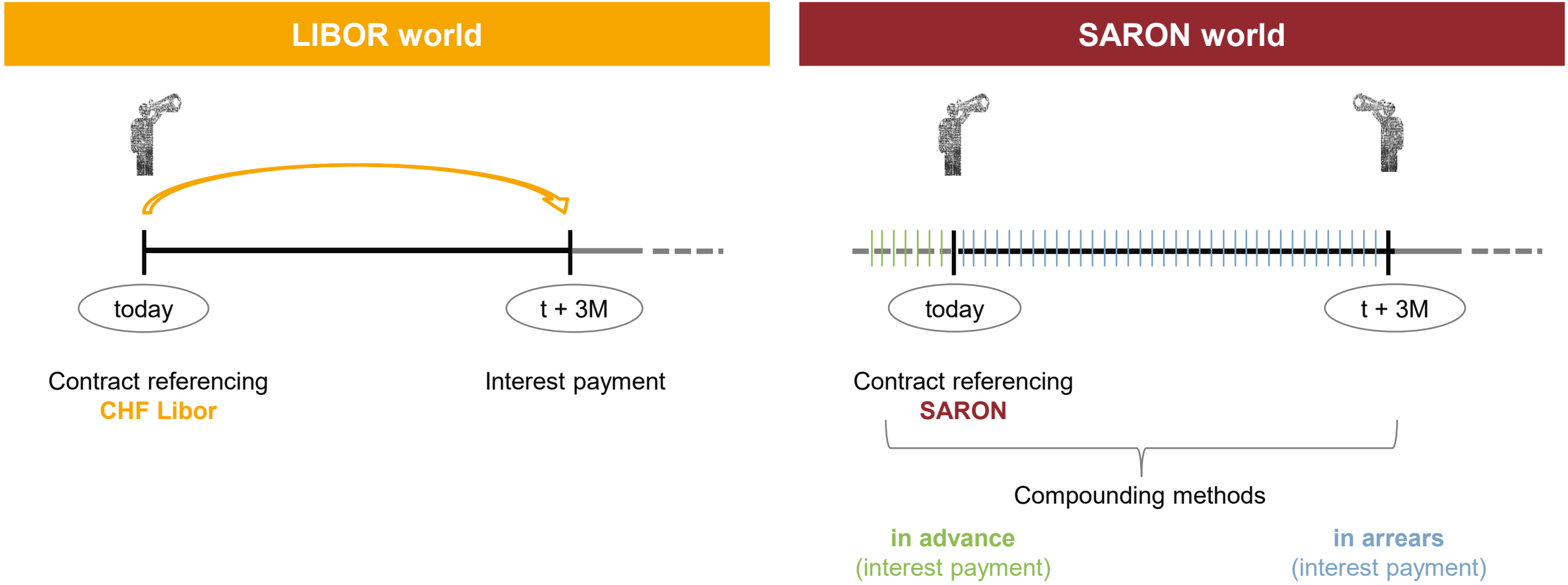
Paradigm shift I: Characteristics of new reference rates



* In contrast to Libor, the new reference rates are overnight rates.
** SARON is based on transactions in the overnight segment of the Swiss franc repo market, where interbank activity predominates.
Abbreviations: Libor = London Interbank Offered Rate; €STR = Euro Short-Term Rate; SARON = Swiss Average Rate Overnight; SOFR = Secured Overnight Financing Rate; SONIA = Sterling Overnight Index Average; TONA = Tokyo Overnight Average Rate.

Source(s): SNB, based on Schrimpf and Sushko (2019), Beyond LIBOR: a primer on the new benchmark rates. BIS Quarterly Review, Q1 2019.

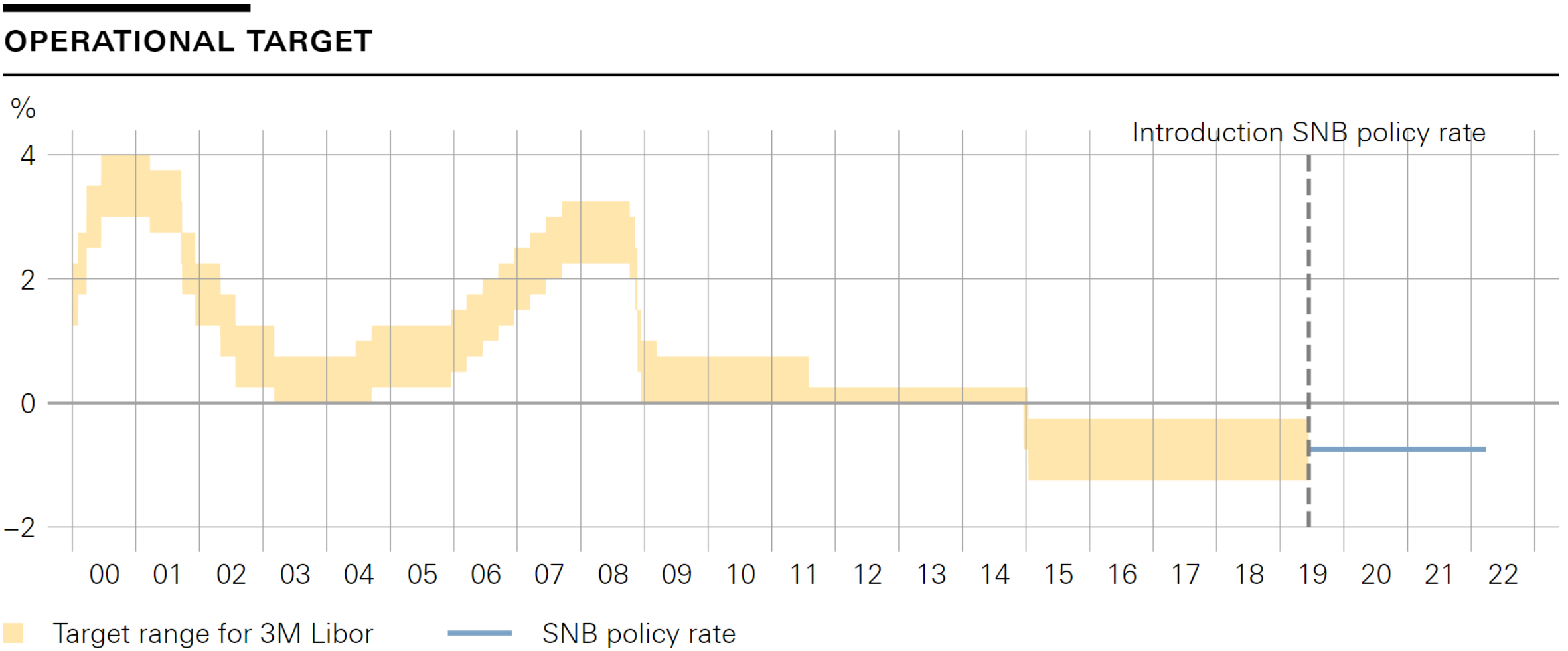
Paradigm shift II:
Moving from a term reference rate to an overnight reference rate



Source(s): NWG, SNB

Chart 8

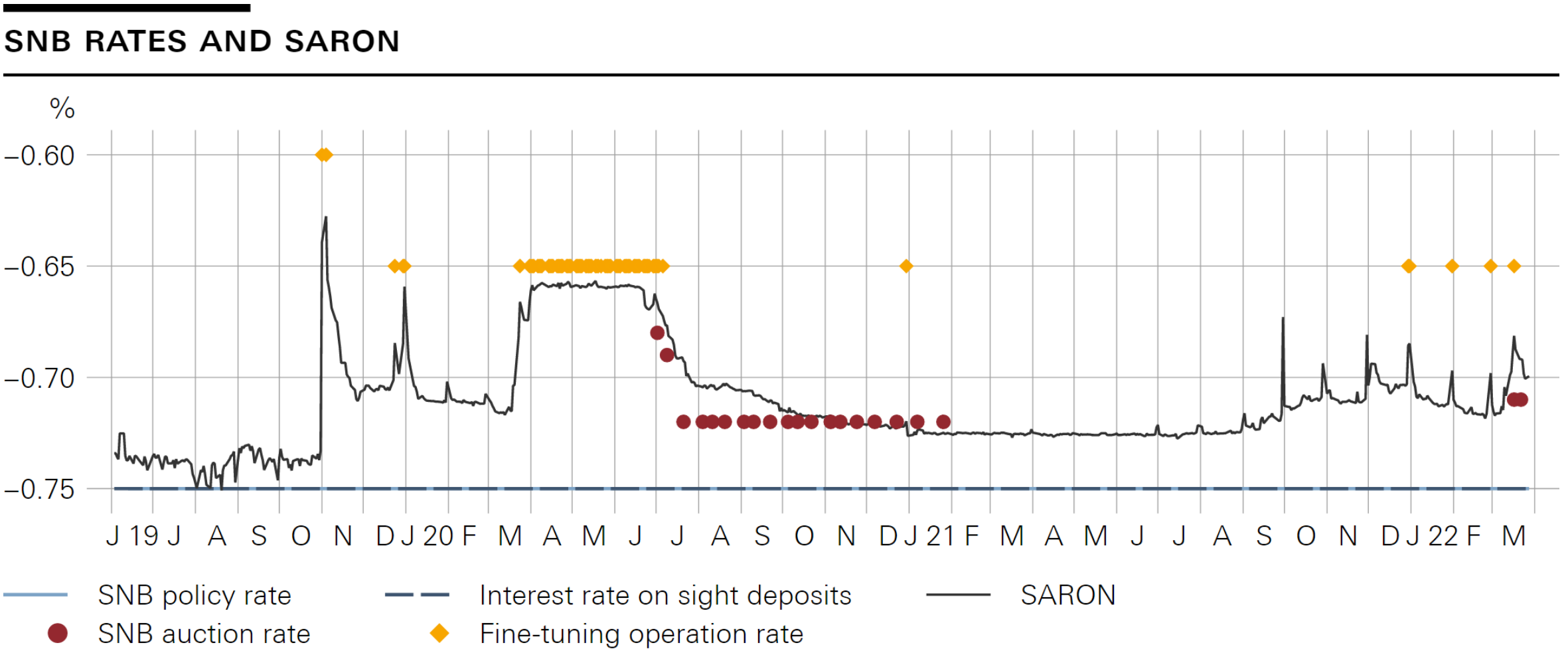
SNB replaced target range for 3M Libor with SNB policy rate in 2019



Source(s): Bloomberg, SNB

Chart 9

Interest rate on sight deposits, fine-tuning operations, and repo auctions guide SARON



Source(s): SNB, SIX Repo Ltd, Bloomberg

Thank you for your attention

SCHWEIZERISCHE NATIONALBANK
BANQUE NATIONALE SUISSE
BANCA NAZIONALE SVIZZERA
BANCA NAZIUNALA SVIZRA
SWISS NATIONAL BANK