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**The implementation and transmission of the SNB's monetary
policy during the recent tightening cycle**
Money Market Event

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Swiss National Bank

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Ladies and gentlemen

Welcome to this year's Money Market Event of the Swiss National Bank in Zurich. It is a great pleasure to see so many of you here this evening.

A year ago, at the time of our last Money Market Event in Zurich, the number one issue for the SNB and central banks worldwide was inflation. Global inflation had risen sharply in 2021, driven by a surge in energy prices, supply chain disruptions and strong economic demand as the coronavirus lockdowns came to an end (cf. chart 1). The war in Ukraine further exacerbated the situation. As a result, inflation also picked up in Switzerland (red line in chart 1). Swiss consumer price inflation peaked at 3.5% in August 2022. From a Swiss perspective, this was a worryingly high rate, even though the inflation rates of some of our main trading partners were significantly higher.

In 2023, inflation began to decline both globally and in Switzerland. In fact, the decline in inflation was faster than originally expected. By June 2023, Swiss inflation had fallen below 2% and was thus back within the range that the SNB equates with price stability. At our last monetary policy meeting in March, we decided to lower the SNB policy rate by 0.25 percentage points to 1.5%. This was our first interest rate cut since 2015. Our latest forecast indicates that inflation is likely to remain within the price stability range over the next three years, even taking into account the recent interest rate cut (cf. chart 2).

In today's speech, my colleague Thomas Moser and I will take a close look at our monetary policy implementation and its transmission during the recent tightening cycle, and we will examine how this contributed to the substantial decline in inflation. Specifically, after discussing the importance of monetary conditions for price stability, we will examine how the SNB's implementation of its interest rate policy in the secured short-term Swiss franc money market, and its transmission to other market interest rates and the economy as a whole, contributed to reducing price pressures in Switzerland. Finally, we will briefly discuss the SNB's foreign exchange (FX) interventions. Such interventions are conducted as necessary to complement the SNB's interest rate policy.

The SNB must maintain appropriate monetary conditions in order to ensure price stability

The SNB has achieved its objective of maintaining price stability in the medium term.

Chart 3 shows the annual inflation rate in Switzerland (black line), together with the long-term average inflation rate (dashed line) and the SNB's price stability range (shaded area). As you can see, inflation has been within the SNB's price stability range for most of this period.¹ Moreover, inflation has averaged 0.6% per year since the introduction of the SNB's current monetary policy concept in 2000.

¹ Although there have been instances where inflation has temporarily moved outside the defined range, price stability has been maintained over time. If inflation temporarily exceeds 2% or temporarily sinks below 0%, this may be the result of exceptional factors, such as a sudden and large change in oil prices or strong exchange rate fluctuations.

While this inflation performance is the result of various factors – both institutional and policy-related – price stability depends directly on appropriate monetary conditions.

These are determined by the levels of interest rates and exchange rates. If interest rates are too low, monetary conditions become too loose, fostering excess demand and rising inflation. Conversely, if interest rates are too high, monetary conditions tighten, which then slows down economic activity and inflation. The level of exchange rates directly affects inflation through import prices. An appreciation of the Swiss franc lowers import prices, which directly reduces their contribution to inflation in Switzerland.² As a small open economy, Switzerland is highly exposed to external developments. Exchange rate movements can therefore have a particularly strong impact on inflation and economic activity in our country.³

The SNB influences monetary conditions primarily through its interest rate policy. It sets its policy rate to ensure appropriate monetary conditions in Switzerland. Changes in the policy rate affect both the levels of domestic interest rates and Swiss franc exchange rates (cf. chart 4).⁴ If the SNB expects inflation to rise persistently above desirable levels, it can raise the policy rate and strengthen the Swiss franc, thereby cooling the economy and inflation. Conversely, if the SNB anticipates that inflation might fall below the range that is consistent with price stability, it can lower the policy rate to stimulate economic activity and help prevent deflation.

Changes in the level of interest rates have a broad impact on the economy, albeit with some time lag. The effects filter through to the economy via various channels. For example, changes in interest rates affect the cost of capital, which over time leads to adjustments in both consumption and investment decisions. The level of interest rates also affects asset prices, which in turn affect household wealth and the value of collateral. In addition, any change in interest rates can affect the Swiss franc exchange rate. For example, a rise in Swiss interest rates relative to foreign interest rates may strengthen the Swiss franc and thus dampen demand for Swiss exports.

The SNB complements its interest rate policy with additional monetary policy measures, particularly FX intervention, as necessary.⁵ Given the importance of the Swiss franc exchange rate for economic activity and inflation in Switzerland, as well as the low level of Swiss interest rates, FX intervention is at times an important policy instrument for the SNB. In order to ensure price stability, the SNB can buy or sell foreign exchange against the Swiss

² Indirectly, the exchange rate affects inflation through the demand for domestic goods and services, with a Swiss franc depreciation increasing demand and an appreciation reducing it.

³ Switzerland is special to the extent that the Swiss franc can behave independently of domestic factors due to its international role as a 'safe haven' currency – that is to say, a currency that is attractive to investors in times of heightened global uncertainty and market turbulence. This can lead to sharp and rapid appreciation of the franc, making Swiss exports more expensive and imports cheaper, which can undermine price stability by creating a deflationary environment. In recent years, a number of crises have led to a surge in the value of the Swiss franc, in particular the global financial crisis and the European sovereign debt crisis.

⁴ Cf. Fink, Frei, Maag, and Zehnder (2024).

⁵ Following a comprehensive review in 2022, the SNB's monetary policy concept now explicitly provides for the use of additional monetary policy measures to influence the exchange rate or the interest rate level as necessary.

franc. FX interventions have a direct impact on the Swiss franc and thus on the prices of imported goods and services (cf. chart 4).

In the most recent tightening cycle, the SNB counteracted the rise in inflation by raising its policy rate and letting the Swiss franc appreciate. When inflation started to rise in 2021, the SNB reacted first by letting the Swiss franc appreciate (green line in chart 5), which dampened external price pressures. In addition, the SNB started to sell foreign exchange in the second half of 2022. Without this appreciation, the contribution of imported inflation from mid-2022 onwards would have been even larger (yellow bars in chart 5).⁶ Furthermore, the SNB began to raise its policy rate rapidly from June 2022. This is reflected in the red line in chart 5, which shows the 1-year SARON⁷-based swap rate. The rise in interest rates contributed to a tightening of monetary conditions, thereby helping to contain domestic inflation by dampening second-round effects (blue bars in chart 5).

The combined effects of higher interest rates and the appreciation of the Swiss franc have led to a significant tightening of monetary conditions in Switzerland since 2021. In order to gauge an economy's monetary conditions, the effects of interest rates, the exchange rate and other factors can be aggregated into a single index. In chart 6 we show the Goldman Sachs Financial Conditions Index (FCI) for Switzerland. In this index, interest rates and the exchange rate have significant weights (over 60% and 20% respectively).⁸ Indeed, the 20% weight of the exchange rate in the Swiss FCI is the highest of all countries for which Goldman Sachs calculates FCIs. As you can see, monetary conditions in Switzerland tightened considerably between 2021 and the end of 2023. Chart 6 shows that this was due both to higher interest rates (red area) and, even more importantly, the appreciation of the Swiss franc (blue area).

To influence monetary conditions, the SNB must implement its interest rate policy effectively in order to enable strong transmission to market interest rates. It is important to be clear about the meaning of two terms: implementation and transmission. In this speech, we use the term 'implementation' to describe the measures that the SNB takes to ensure that secured short-term money market rates, of which SARON is the most important, are close to the SNB policy rate. By contrast, we use the term 'transmission' to describe the pass-through of the policy rate to other relevant market interest rates and, ultimately, to economic activity and inflation. The implementation of our monetary policy involves various instruments, including the remuneration of banks' sight deposits at the SNB and the conduct of open market operations, such as repo transactions and the issuance of SNB Bills. These are the key instruments that the SNB uses to implement its interest rate policy. The monetary policy stance is then transmitted to many market interest rates.

⁶ The relatively moderate rate of inflation compared with our main trading partners ensured that Swiss exporters remained internationally competitive, despite the nominal appreciation of the Swiss franc. The real appreciation of the Swiss franc – taking into account these inflation differentials – was much less pronounced.

⁷ Swiss Average Rate Overnight.

⁸ Conditions in equity and corporate bond markets account for the remaining weights.

The SNB implements its interest rate policy in the secured short-term Swiss franc money market

The SNB implements its interest rate policy by steering secured short-term Swiss franc money market rates. It is important to note that the SNB's policy rate is not a market interest rate, but a means of communicating its monetary policy stance. In order to influence monetary conditions in Switzerland, the SNB sets the policy rate at the desired level and steers secured short-term money market rates close to the SNB policy rate through tiered remuneration of sight deposits and liquidity-absorbing operations. SARON is the most important secured short-term Swiss franc money market rate.⁹ During the recent tightening cycle, the SNB raised its policy rate by a total of 2.5 percentage points from -0.75% to $+1.75\%$. Chart 7 shows the policy rate (blue line) and SARON (red line). As you can see, each increase in the policy rate was fully passed through to SARON.

The SNB's implementation framework helps to closely align all short-term Swiss franc money market interest rates. Some of these rates, such as unsecured short-term money market rates and implied rates from currency swaps, affect the funding costs of financial institutions, which in turn influence the pricing of financial products. Most of the time, arbitrage ensures a close link between all short-term money market interest rates.

Occasionally, however, market frictions can disrupt arbitrage mechanisms. In such cases, the SNB's implementation framework helps to ensure that these interest rates remain well linked. For example, while the SNB can intervene directly in the repo market to influence SARON, the remuneration of banks' sight deposits that exceed their thresholds (currently set at half a percentage point below the SNB policy rate) supports the alignment of interest rates in other market segments where the SNB is not directly active. In particular, this is helpful for money market rates, such as rates implied from currency swaps. Another example is SNB Bills. As part of its implementation framework, the SNB issues bills to absorb liquidity. These bills have the additional benefit of contributing to the alignment of short-term interest rates, as they are available to all financial market participants, including those without access to the Swiss franc repo market on which SARON is based.

All short-term money market rates in Swiss francs closely track the SNB policy rate.

Chart 8 shows that during the recent monetary policy tightening cycle, all short-term money market interest rates closely tracked the SNB policy rate. When the SNB adjusts its policy rate and uses its monetary policy instruments to steer SARON close to the new policy rate, other short-term money market interest rates tend to follow. There have only been a few brief phases during which we have observed larger deviations from the SNB policy rate. For example, at year-end we often observe a significant premium for swapping other currencies – including the Swiss franc – into US dollars, which leads to deviations of implied Swiss franc rates from currency swaps relative to the SNB policy rate (yellow and green lines in chart 8). Overall, short-term interest rates across all segments of the Swiss franc money market track

⁹ For a comprehensive discussion of the SNB's current implementation framework, cf. Maechler and Moser (2022b) and Moser (2023).

the SNB policy rate closely. As can be seen in the chart, any deviations have tended to be moderate and short-lived, and they have been effectively contained by various aspects of our implementation framework.

The SNB's policy stance transmits to longer-term interest rates and various market segments

In addition to effective implementation, a strong and broad transmission of the SNB's interest rate policy is crucial for ensuring appropriate monetary conditions. While some financial products, such as variable-rate mortgages, are priced directly on the basis of SARON, the SARON-based swap curve also plays an important role in facilitating a broad transmission. This is because most financial products, such as Swiss franc-denominated mortgages, loans and bonds, are priced using the SARON-based swap curve. Thus, SARON is not only the most important directly used reference rate in Switzerland, but it also serves as an anchor for the swap curve and is therefore also relevant for other Swiss franc interest rates.¹⁰

Adjustments to the SNB's interest rate policy are transmitted to the SARON swap curve. While the SNB directly controls SARON, the short end of the swap curve, it also influences longer-term rates by shaping expectations, for example via the publication of its quarterly conditional inflation forecast.¹¹ Chart 9 illustrates this by showing the SARON swap curve at three different points in time. In May 2022, just before the first increase in the SNB policy rate, the swap curve was upward sloping, as expectations of higher future interest rates were priced in at the longer end of the curve (blue line). A year later, the swap curve was almost flat, as short-term rates had risen significantly more than longer-term rates (red line). This picture was consistent with market participants' expectations that no further rate hikes were needed to prevent inflation from rising. Today, the swap curve is inverted, which is consistent with market participants' expectations of moderate inflation and further cuts in the SNB policy rate in the near future (yellow line).

Adjustments to the SNB's interest rate policy are also transmitted to other segments of the financial market. For transmission to be effective, the SNB policy rate must influence not only interest rate swaps, but also all other relevant financial market segments. Chart 10 shows the path of several 10-year interest rates from 2021 onwards. As you can see, the interest rates on mortgages (red line), one of the main financial products offered by banks, have closely tracked swap rates since the beginning of 2022 (blue line).¹² Yields on other financial market products, such as corporate bonds (green line) and covered bonds (yellow

¹⁰ For a broader discussion of how SARON replaced LIBOR as the main Swiss franc benchmark interest rate, cf. Maechler and Moser (2022a).

¹¹ The SNB traditionally gives no explicit forward guidance on its intended rate path.

¹² The usual strong correlation between swap rates and fixed-rate mortgages has reappeared as interest rates have moved back into positive territory. This correlation had been subdued in the negative interest rate environment, as banks tried to compensate for their negative liability margin (cf. Baeriswyl et al. 2021).

line), have also tracked swap rates closely. After rising sharply in 2022, these interest rates stabilised in 2023 and have even fallen somewhat in recent months.

In summary, the robust transmission of the SNB's interest rate policy to market interest rates has helped to reduce inflationary pressures. While part of the decline in Swiss inflation in recent months can be attributed to the fall in imported inflation, the SNB's interest rate policy and its robust transmission have helped to mitigate second-round effects on inflation by keeping medium-term inflation expectations well anchored. Importantly, in the recent tightening cycle, the SNB complemented its interest rate policy with FX interventions in order to create monetary conditions that are conducive to price stability over the medium term.

The SNB uses FX intervention to complement its interest rate policy as necessary

FX intervention is a well-established monetary policy instrument at the SNB. For many years, it has used FX intervention as a complementary instrument alongside the policy rate. During this time, it has gained considerable experience in the effective deployment of this instrument.¹³ In particular, the SNB has invested heavily in know-how and technology in order to keep pace with developments on the global FX markets. Two key trends stand out: the increasing electronification and the fragmentation of the FX markets. Nowadays, most FX transactions are executed electronically and trading volumes have shifted from the primary markets to an increasing number of different platforms.¹⁴

During the recent tightening cycle, the SNB sold foreign exchange, which contributed to the appreciation of the Swiss franc and helped to dampen imported inflation. In the past, the SNB has used FX intervention to help counter deflationary pressure. For example, during the coronavirus pandemic, it bought foreign exchange to counter the sharp and abrupt appreciation of the Swiss franc, which had put excessive downward pressure on inflation. By contrast, in 2022, when inflation rose in Switzerland as well as globally, the SNB started selling foreign exchange to support the appreciation of the Swiss franc, thereby dampening imported inflation (cf. chart 11).

In summary, FX intervention has proved to be an important complementary monetary policy instrument for the SNB. FX intervention has been effective in combating both deflationary and inflationary pressures. This underscores the versatility of this instrument for maintaining price stability in Switzerland. Without its FX sales, the SNB would have had to

¹³ Academic research suggests that FX intervention can affect the exchange rate, both in the short term and the long term, because it works through a broad variety of channels. For example, interventions influence market liquidity, portfolio balances and the money supply, but they also send signals that influence market expectations (e.g. Sarno and Taylor, 2001; Bouchaud, 2022). Cf. also Cwik and Winter (2024) for evidence on the effectiveness of the SNB's FX purchases in the period until June 2022.

¹⁴ For a broader discussion of structural changes in the FX market and their implications for the SNB, cf. Maechler and Moser (2021).

raise interest rates much more during the recent tightening cycle in order to ensure appropriate monetary conditions.

Conclusion

Inflation in Switzerland peaked at 3.5% in August 2022, and it has since fallen sharply. In March of this year, it stood at 1.0%. While the easing of global supply chain constraints and lower energy prices helped, the SNB's adjustment of monetary conditions played a key role in reducing inflationary pressures. By implementing its policy rate effectively in the secured short-term Swiss franc money market and by ensuring broad transmission to all relevant financial market interest rates and Swiss franc exchange rates, the SNB was able to rapidly dampen inflation in Switzerland. As a complement to its interest rate policy, the SNB sold foreign exchange to counter inflationary pressures from abroad. While interest rate policy is the SNB's main lever for influencing monetary conditions, in a small open economy such as Switzerland, FX intervention has proved to be an effective additional instrument for creating monetary conditions that ensure price stability.

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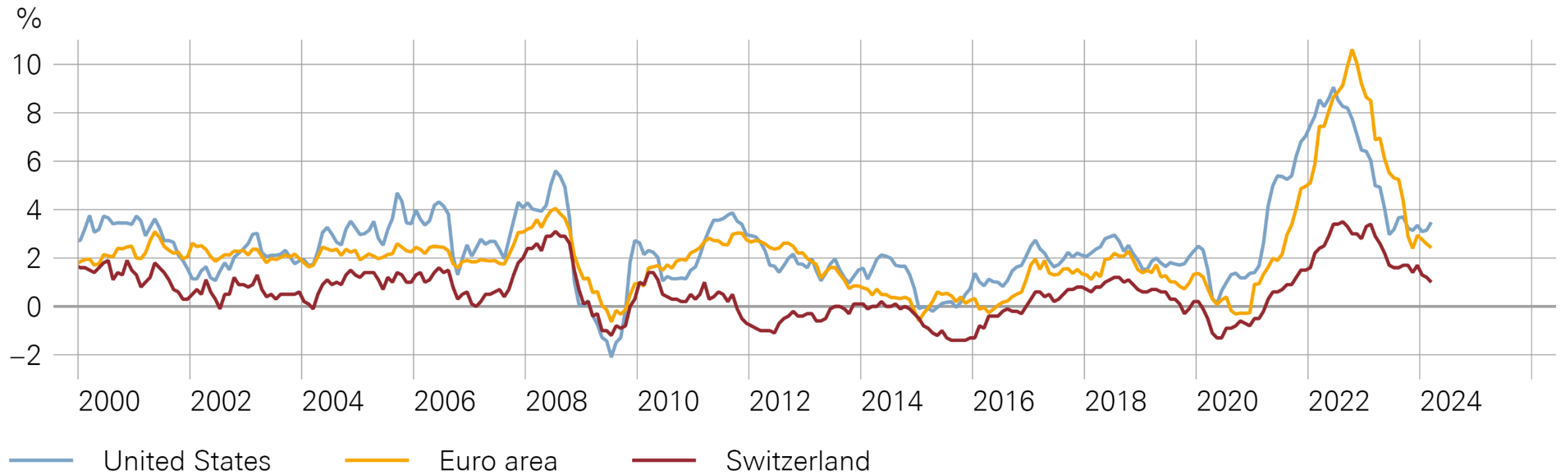
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BANCA NAZIUNALA SVIZRA
SWISS NATIONAL BANK



Global inflation has fallen significantly since peaking in the second half of 2022

CONSUMER PRICE INFLATION

Year-on-year change

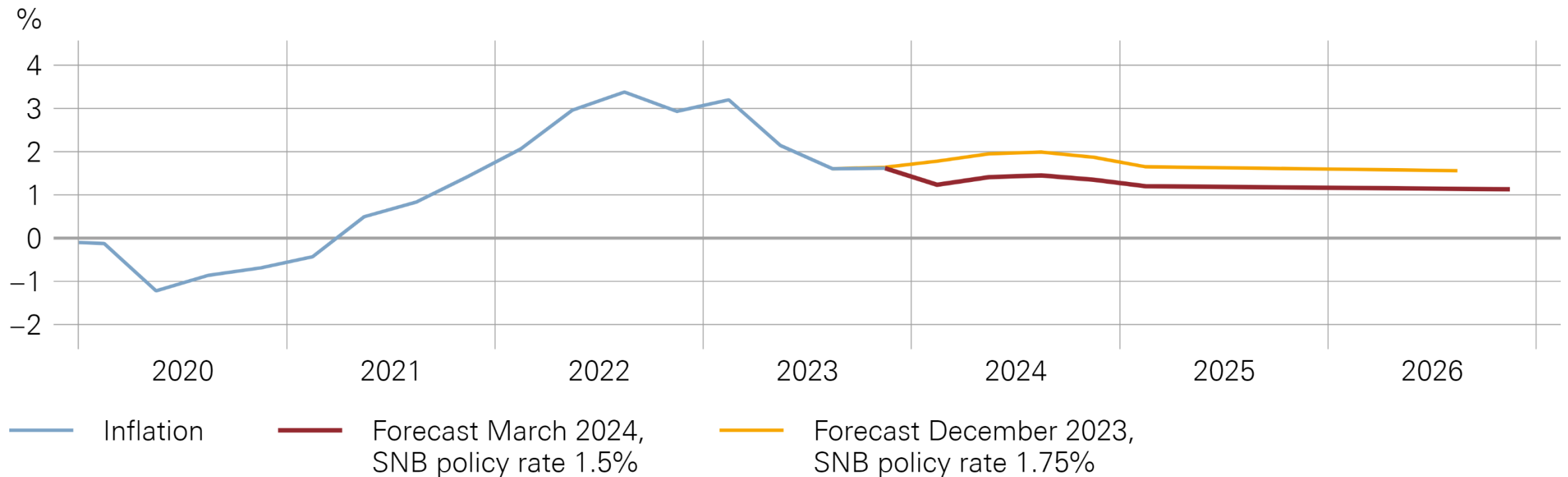


Source(s): BLS, Eurostat, SFSO, SNB

Over the next few years, the SNB's conditional inflation forecast is within the range that the SNB equates with price stability

SWISS CONSUMER PRICE INDEX AND CONDITIONAL INFLATION FORECAST OF MARCH 2024

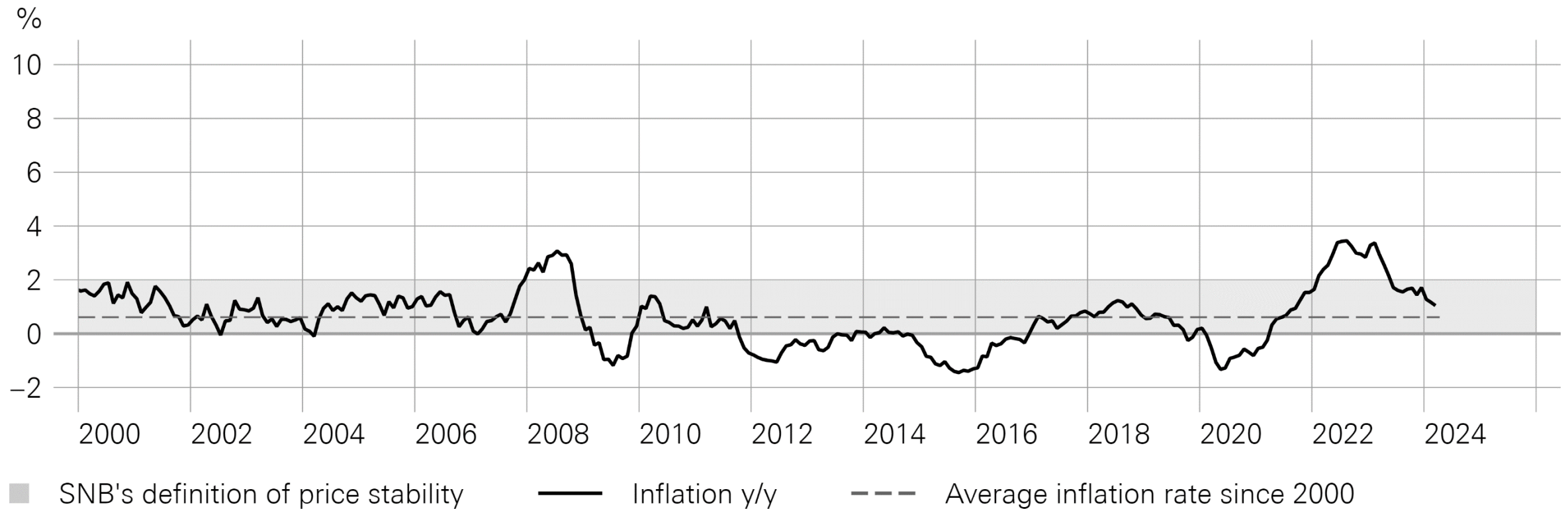
Year-on-year change



Source(s): SFSO, SNB

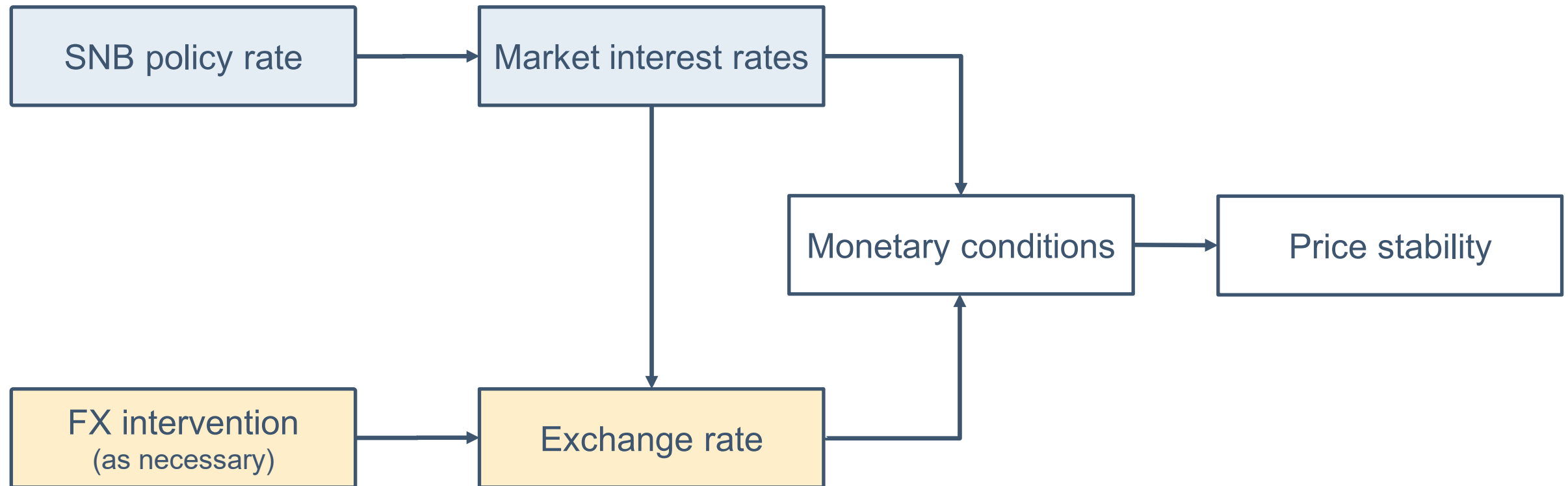
Since 2000, the SNB has achieved its objective of maintaining price stability over the medium term

SWISS INFLATION AND THE SNB'S DEFINITION OF PRICE STABILITY



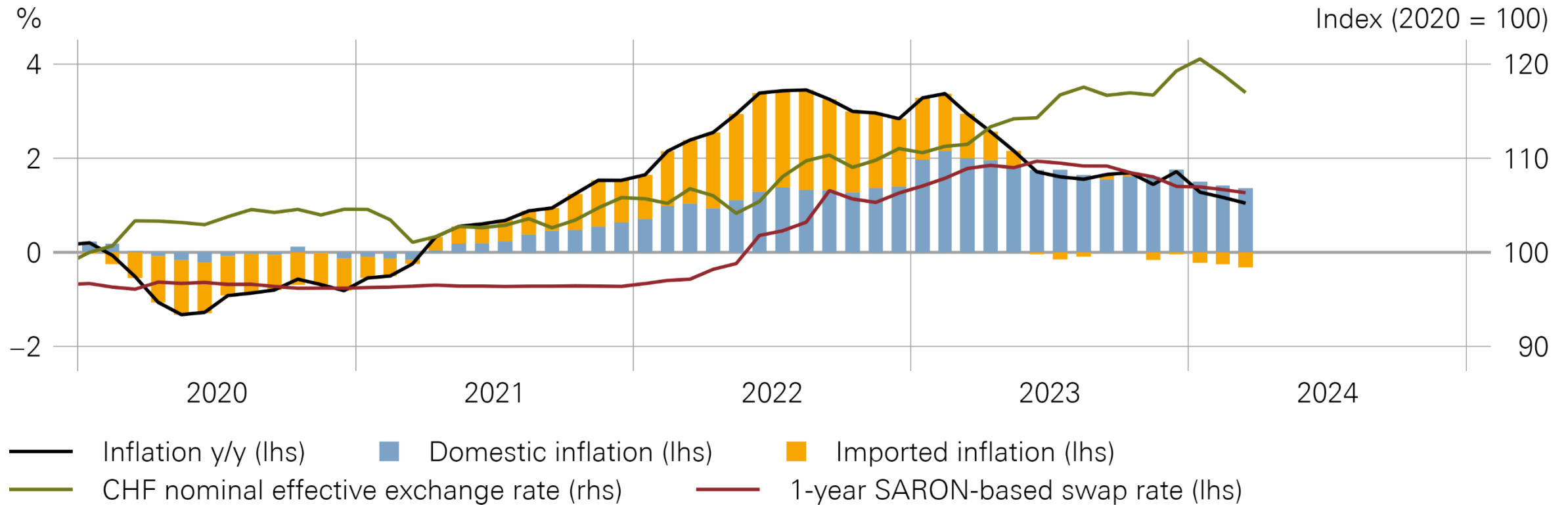
Source(s): SFSO, SNB

The SNB must maintain appropriate monetary conditions in order to ensure price stability



The SNB must maintain appropriate monetary conditions in order to ensure price stability

SWISS INFLATION WITH CONTRIBUTIONS, EXCHANGE RATE AND SARON-BASED SWAP RATE

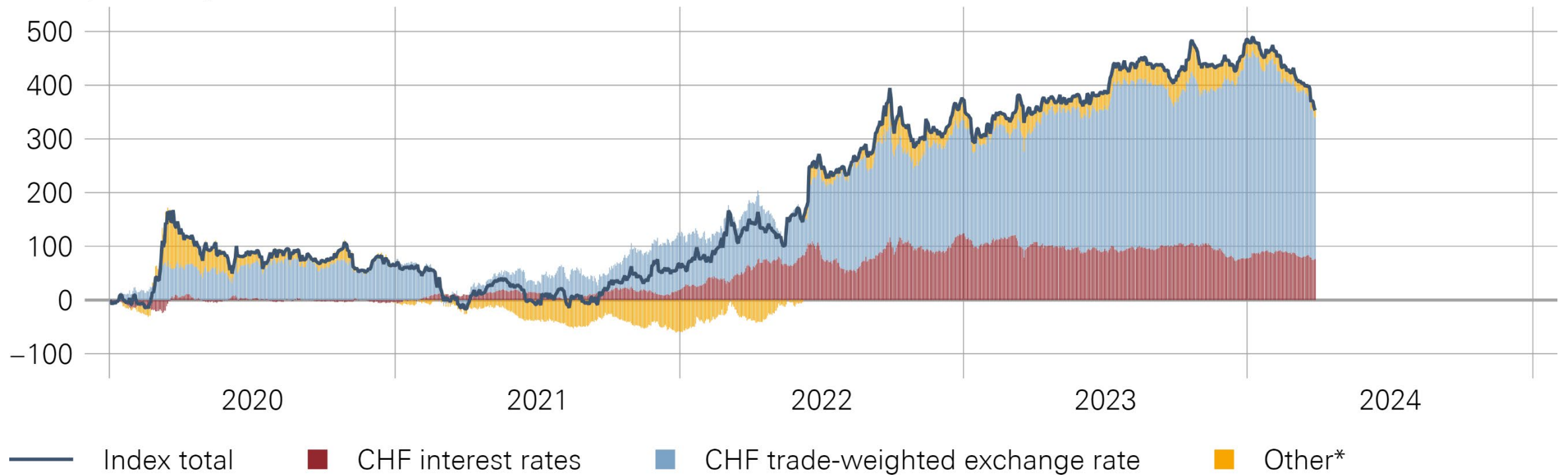


Source(s): Bloomberg, IMF, SFSO, SNB

Swiss monetary conditions have tightened significantly since 2021

GOLDMAN SACHS FINANCIAL CONDITIONS INDEX FOR SWITZERLAND, WITH CONTRIBUTIONS

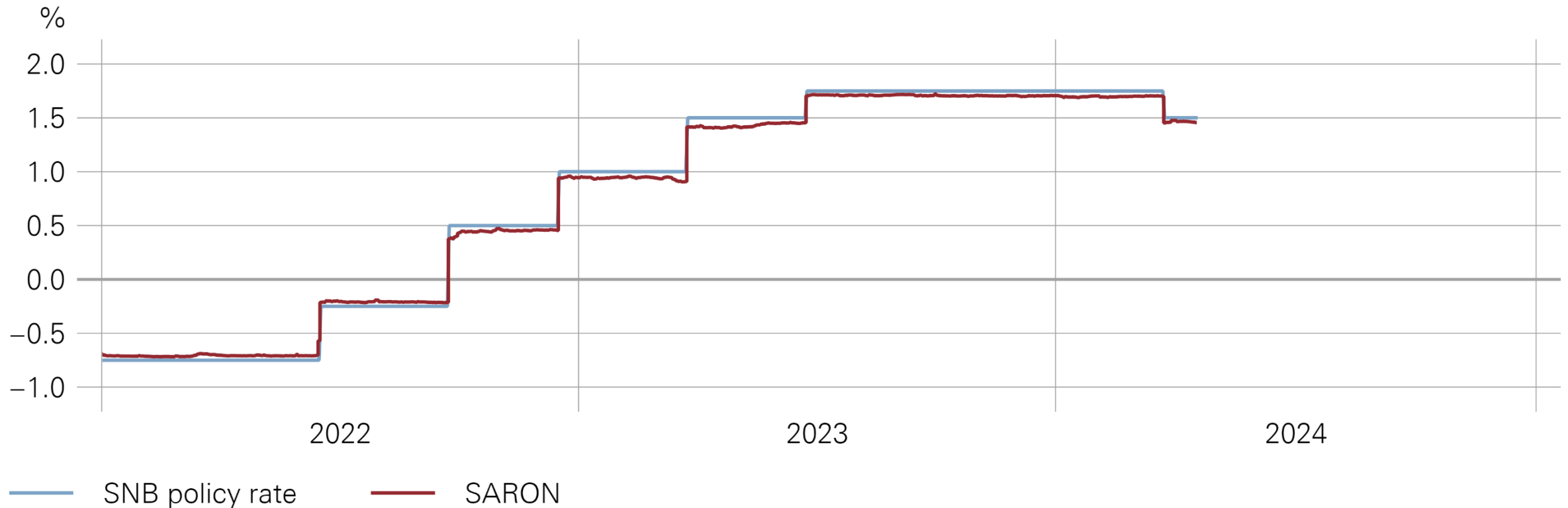
Index (2020 = 0)



Source(s): Goldman Sachs, SNB **Note:** *Other includes credit spreads and equities.

The SNB implements its interest rate policy by steering secured short-term Swiss franc money market rates close to the SNB policy rate

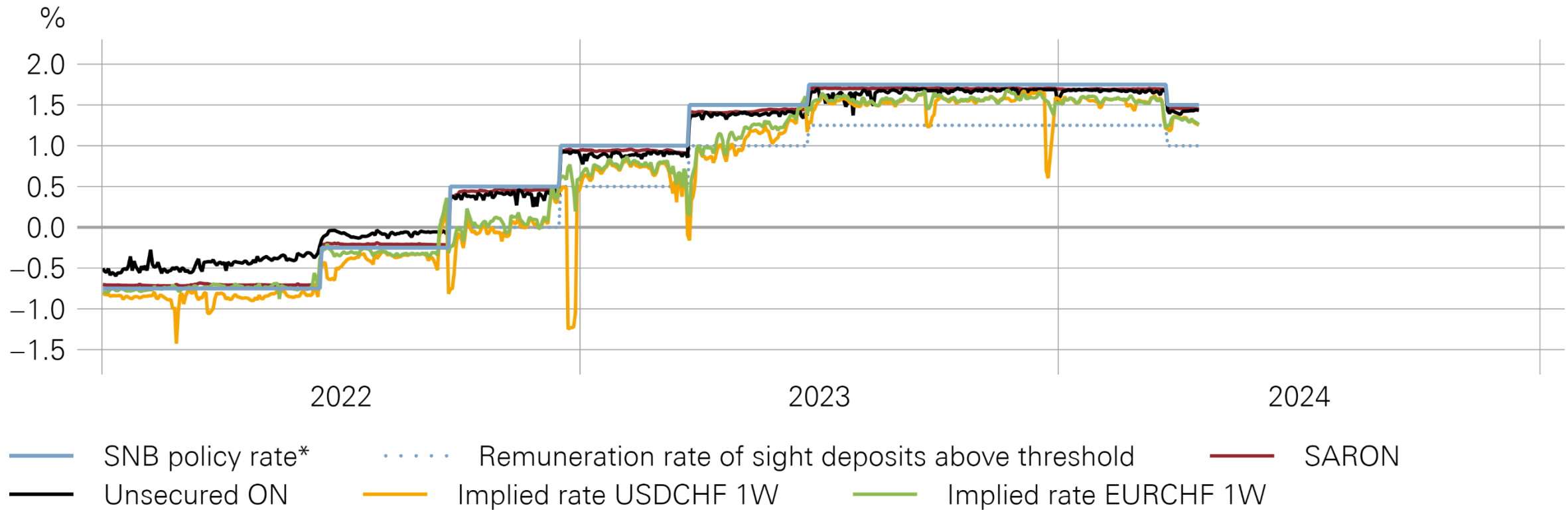
SNB POLICY RATE AND SARON



Source(s): SNB

All short-term money market rates in Swiss francs closely track the SNB policy rate

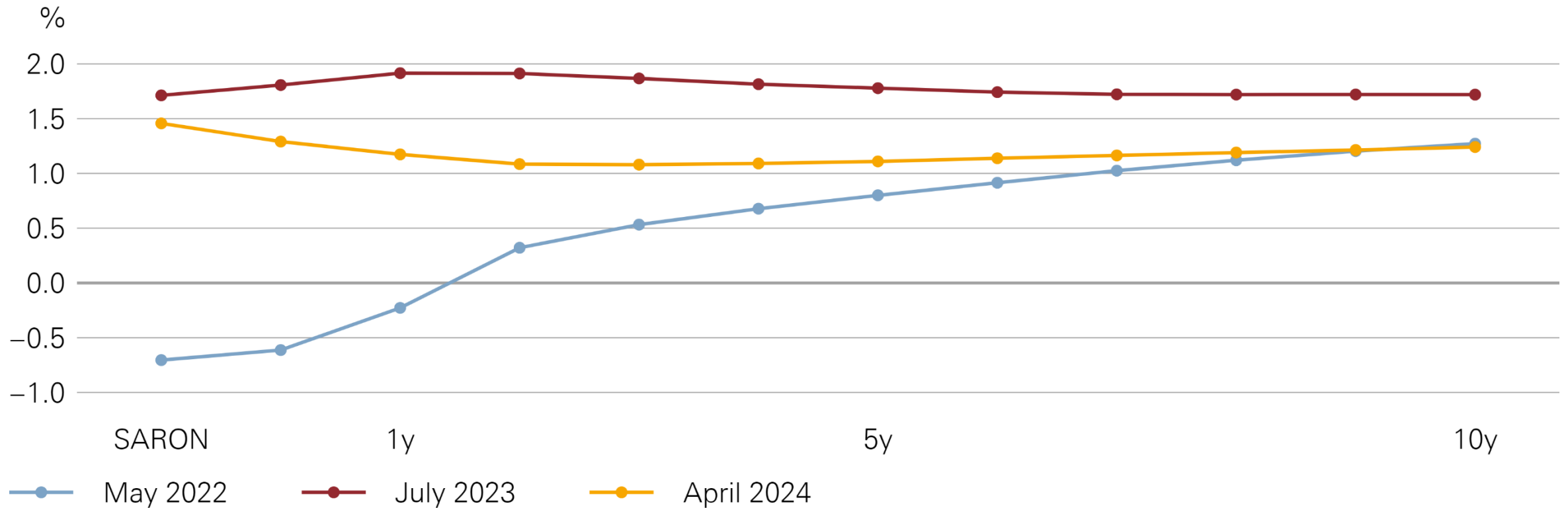
SNB POLICY RATE AND SHORT-TERM MONEY MARKET RATES



Source(s): Bloomberg, Gottex Brokers, Instimatch, SNB. *Corresponds to remuneration rate of sight deposits up to threshold from September 2022.

The SNB's policy stance transmits to the SARON swap curve

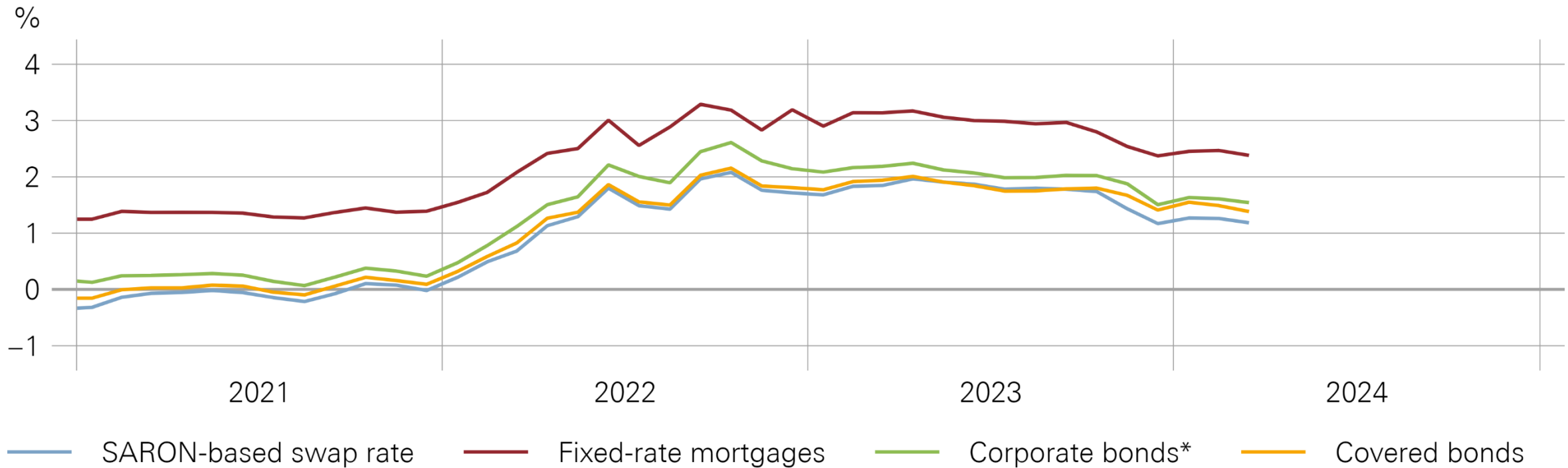
SARON-BASED SWAP CURVES



Source(s): Bloomberg, SNB

The SNB's policy stance transmits to various market segments

10-YEAR INTEREST RATES IN VARIOUS MARKET SEGMENTS

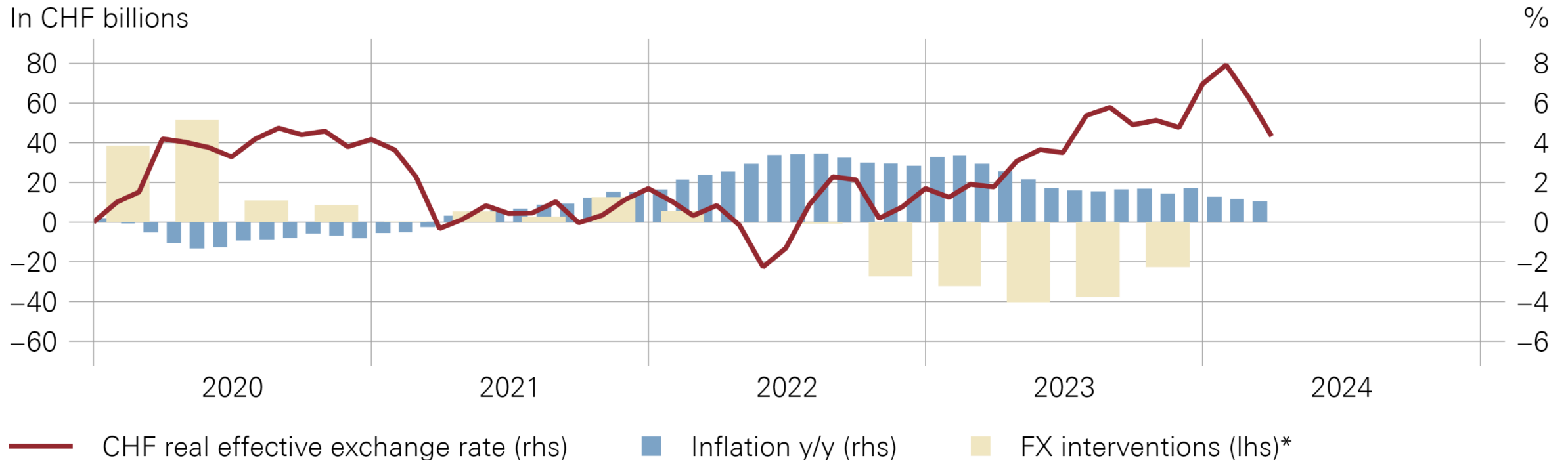


* Includes bonds issued by manufacturers (including power plants) and trade

Source(s): Bloomberg, SNB

The SNB sold foreign exchange to support the appreciation of the Swiss franc and thereby dampen imported inflation

CHF EFFECTIVE EXCHANGE RATE, INFLATION AND THE SNB'S FX INTERVENTIONS



*FX intervention data reported up to Q4 2023

Source(s): IMF, SFSO, SNB

Thank you for your attention.

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