

Financial Stability Report 2024

SCHWEIZERISCHE NATIONALBANK
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Financial Stability Report 2024

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Foreword

In this report, the Swiss National Bank presents its assessment of the stability of the Swiss banking sector. The SNB contributes to the stability of the financial system in accordance with the National Bank Act (art. 5 para. 2 (e)). A stable financial system is defined as a system in which the various components fulfil their functions and are able to withstand severe shocks. Moreover, the Banking Act designates certain banking sector functions as systemically important, i.e. they are considered indispensable to the Swiss economy and cannot be substituted at short notice.¹ These are, in particular, the domestic deposit and lending business as well as payment transactions.

This report focuses on Switzerland's banks, as financial stability primarily depends on the stability of the banking sector. Non-bank financial institutions (NBFIs) such as insurance companies, pension funds and investment funds also play a major role as providers of financial services in Switzerland. While experience from abroad shows that NBFIs can likewise pose a risk to the financial system, on a standalone basis they tend to pose fewer risks to financial stability than banks due to structural differences in business models.

The SNB monitors developments in the banking sector from the perspective of the system as a whole and with a special emphasis on the four systemically important banks. Systemically important banks are banks whose failure could cause serious damage to the Swiss economy and Swiss financial system, in particular on account of their size and interconnectedness with the economy and the rest of the financial system.

As part of its risk monitoring, the SNB assesses the banks' resilience to adverse macroeconomic and financial market developments using scenario analysis. Moreover, the SNB has two macroprudential regulatory powers at its disposal, namely the authority to designate banks as systemically important and to submit a proposal to the Federal Council for the activation, adjustment or deactivation of the countercyclical capital buffer (CCyB). In addition, the SNB participates in the work of

¹ Cf. Banking Act, art. 8 para. 1.

international bodies that further develop regulatory principles and standards, contributes to the elaboration and implementation of financial regulation at national level, and oversees systemically important financial market infrastructures (FMIs). In the management of crises, the SNB acts as lender of last resort. The SNB does not, however, exercise any banking supervision.

The Swiss Financial Market Supervisory Authority (FINMA) is responsible for the supervision of financial markets and financial institutions.² This also includes authorising, licensing and regulating financial institutions, enforcing banking legislation and imposing measures – such as additional capital and liquidity charges – on individual banks to address increased risk. Among FINMA’s responsibilities in enforcement are measures to stabilise financial institutions in the event of a crisis, emergency and resolution planning, as well as restructuring, liquidation and insolvency proceedings.

This report is divided into five chapters. The executive summary is followed by chapter 2, which tracks key domestic and global risks to the Swiss banking sector, focusing on credit quality, real estate and stock markets, interest rates, and developments in the international banking sector. Furthermore, the Swiss real estate and credit markets as well as climate risks are discussed in separate subchapters. Chapter 3 provides an overview of the Swiss banking sector’s structure as well as of the role played by NBFIs in Switzerland. Chapter 4 assesses the stability of the Swiss banking sector by discussing its resilience, the risks to which it is exposed, scenario analysis, the market’s assessment, as well as the resolvability of systemically important banks. The focus lies on the domestically focused banks and on UBS as they are the primary providers of systemically important functions in Switzerland. Domestically focused banks comprise banks with a share of domestic loans to total assets exceeding 50% or with a prominent role in the domestic deposit market. They include the three domestically focused systemically important banks (DF-SIBs): PostFinance, Raiffeisen Group and Zürcher Kantonalbank (ZKB). The domestically focused banks

² Cf. www.finma.ch.

and UBS are analysed separately due to the differences in their size and business model. Chapter 5 presents selected special topics.

The banking statistics used in this report are based on official data submitted to the SNB and on data published by individual banks. Bank data are predominantly analysed at a consolidated level, i.e. banks within a group and banks legally obliged to provide assistance to each other are treated as a financial group. This document is based on data as at 31 May 2024.

A list of all abbreviations used in this report is provided at the end of the document. A glossary of technical terms can be found on the SNB's website at www.snb.ch/glossary.

Macroeconomic and financial environment

Since the publication of the last Financial Stability Report in June 2023, developments in the economic and financial environment of the Swiss banking sector have been mixed, with financial market indicators generally painting a more positive picture than other indicators.

In an environment of declining inflation, financial market indicators have improved overall. Global equity prices have increased and credit risk premia have narrowed further in both the sovereign and the corporate segments. In addition, the increase in global interest rates over the past two years has allowed banks to expand their interest rate margins and to increase their profitability. Global residential real estate markets have been fairly resilient to the higher interest rate levels so far. This is also the case in Switzerland, where growth has declined but remained positive for residential real estate prices in the owner-occupied segment and for mortgage volumes. In the Swiss residential investment property segment, prices have increased slightly but remained below the peak levels observed in 2022.

However, the adverse effects of higher interest rates and subdued global economic growth are visible in a number of segments according to indicators outside of financial markets. In the commercial real estate segment, these factors have added to the structurally lower demand for office and retail space. Commercial real estate prices have dropped substantially in several countries, entailing adverse effects for the credit quality of companies and financial institutions specialised in this sector. There are also signs of declining credit quality outside the commercial real estate sector, as default rates have increased in several jurisdictions, albeit from historically low levels. In Switzerland, cooling in the commercial real estate sector has been comparatively mild so far. Swiss corporate bankruptcy rates have continued to increase but remain below pre-pandemic levels.

Going forward, the SNB's baseline scenario assumes that global economic growth will be moderate in the coming quarters. Consumers' purchasing power is expected to gradually recover and the dampening effect of the monetary policy tightening to ease slowly. Inflation is projected to decline further. In Switzerland, growth is moderate and inflation remains within the range of price stability.

The current global environment carries risks for financial stability. The vulnerabilities in the global real estate, credit and stock markets persist and the level of debt remains

high. In addition to the already observed downside effects described above, the current high level of interest rates may result in further adverse developments in real estate and credit markets, as historical evidence indicates that the effects of interest rate hikes may materialise with a significant time lag. The increased potential for rapid outflows of bank deposits, in particular due to advances in digitalisation and shifts in the composition of deposits, adds to global financial stability risks.

To assess the main risks to the Swiss banking sector stemming from adverse macroeconomic and financial market developments, the SNB considers four stress scenarios. These assume highly unfavourable developments that are unlikely but possible, and they cover a broad spectrum of relevant macroeconomic and financial risk factors. The first scenario assumes a global recession coupled with a deterioration in asset market conditions and decreasing interest rates (global recession scenario). In the second, inflation and inflation expectations pick up again, triggering a renewed, substantial increase in global interest rates, a decline in real estate and financial asset prices, and a stagnation in global economic activity (interest rate shock scenario). The third scenario involves a major crisis in emerging economies (emerging markets crisis scenario). The fourth considers a protracted recession in the euro area coupled with an extended period of low interest rates (protracted euro area recession scenario). The first two scenarios are of particular interest in the current environment as they offer benchmarks for adverse developments in real estate markets, including a substantial price correction in the commercial real estate segment – the global recession scenario in an environment of low interest rates, the interest rate shock scenario in an environment of high interest rates.

In addition to their exposure to adverse macroeconomic and financial market developments, banks are also exposed to operational risks such as legal and cyber risks (cf. special topic in subchapter 5.5). The purpose of the SNB's scenario analysis is not to assess banks' resilience to operational risks per se. This task requires in-depth, off and on-site bank supervision, and it lies within the remit of the Swiss Financial Market Supervisory Authority (FINMA).

Domestically focused banks

Domestically focused banks (DFBs) were able to benefit from higher interest rates and markedly improved their profitability in 2023. The most important driver was rising net interest income, reflecting a significant widening of their net interest rate margins. In addition, increases in net fee and commission income and in trading income contributed to offsetting a rise in operating costs.

Hence, as expected, the increase in interest rates observed in Switzerland in 2022 and 2023 enabled most of these banks to restore their net interest rate margins (cf., for example, SNB Financial Stability Report 2022, p. 37, and special topic in subchapter 5.4), thereby strengthening their first line of defence against losses. As in previous

years, DFBs again retained a significant share of their earnings and further built up their total loss-absorbing capacity – the second line of defence. Overall, these banks' capital buffers are substantial, and high by historical comparison.

The SNB's scenario analysis suggests that, thanks to their profits and capital buffers, DFBs should be able to absorb the economic impact of relevant adverse shocks. Given their exposures, these banks are primarily vulnerable to a significant rise in interest rates coupled with price corrections in the domestic real estate market, as depicted in the interest rate shock scenario. Under this scenario, banks would suffer sizeable credit losses. Furthermore, net interest income would decline as higher funding costs would outweigh the positive contribution from higher interest income. The resulting impact on banks' earnings would deplete a substantial part of the DFBs' capital buffers. However, most of these banks would be able to absorb the losses incurred, even in the absence of counteracting measures such as reducing lending or building up capital. The sectoral countercyclical capital buffer (CCyB), which requires banks to hold additional capital when cyclical risks exist, plays an important role in this respect.

UBS

With the acquisition by UBS, the situation of the former Credit Suisse entities has stabilised. UBS plans to fully merge the Credit Suisse and UBS entities at the respective levels, with the formal merger of the parent banks executed at the end of May 2024 and that of the Swiss entities envisaged for Q3 2024. The integration and restructuring programme is to be completed by the end of 2026. The development of market indicators, such as credit default swap (CDS) premia and the share price since the acquisition in June 2023, indicates that the market is taking a positive view of the prospects for the combined bank.

As regards profitability, UBS posted an exceptional profit for 2023. This was primarily attributable to an accounting gain from the acquisition of Credit Suisse in Q2 2023.¹ Excluding this one-off accounting effect, the bank's profit in 2023 was reduced by the integration of Credit Suisse, especially in the combined wealth management and investment banking divisions. Moreover, significant losses occurred in connection with winding down Credit Suisse positions that are no longer part of the bank's core business. The Swiss division increased its profitability during the same period. In Q1 2024, profitability improved across all business divisions.

¹ Specifically, this accounting gain was negative goodwill, which arises when the purchase price for a company is lower than the difference between the value of the assets acquired and the liabilities assumed.

At group level, as of the end of Q1 2024, UBS already meets its estimate of the future capital requirements under the 'too big to fail' (TBTF) regulations.² The current requirements will increase due to the bank's larger market share and size following the acquisition of Credit Suisse. The combined bank has been granted a transition period, with phase-in starting from 2026 and ending in 2030 at the latest, to comply with the higher requirements.

Figures for the Credit Suisse and UBS parent banks as at the end of Q1 2024 indicate that UBS is also well on track to meet its estimate of the future Common Equity Tier 1 (CET1) capital requirements at parent bank level.³ However, the crisis at Credit Suisse has shown that the treatment of a parent bank's participations in its subsidiaries should be improved.⁴ The risk of these participations is currently not adequately reflected in regulatory requirements,⁵ leading to capital ratios that are vulnerable to impairments of these participations. To address these weaknesses in the current capital regime, the Swiss Federal Council has proposed a strengthening of the capital regulation of parent banks. The current capitalisation of the combined UBS parent bank is stronger than that of the Credit Suisse parent bank before the crisis. Still, the weaknesses of the current regime remain and should be addressed (cf. following section, 'Lessons from crisis at Credit Suisse').

At group level, UBS has to manage a significant portfolio of legacy risk positions following the acquisition of Credit Suisse. It plans to largely unwind these risk positions by the end of 2026. In addition to credit and market risk, UBS, as a universal bank that is also globally active, is exposed to elevated operational risk and business risk. While these risks are not strictly related to specific risk positions, their materialisation can have a strong impact on the overall economic situation of a bank, as shown by the crisis at Credit Suisse. Therefore, the stress tests for UBS take into account all risk categories, including operational risk⁶ and business risk. In its stress scenarios, the SNB continues to regard the loss potential as substantial. In the current situation, integration-related costs and the expected losses in the non-core and legacy division affect UBS's capacity to absorb losses. This is a natural consequence of integrating and de-risking a bank with lower financial strength. Going forward, the wind-down

² Cf. UBS, Q4 2023 Fixed income investor presentation, 6 February 2024.

³ Figures on the combined UBS parent bank are not yet available.

⁴ Between Q3 2021 and Q3 2022, the Credit Suisse parent bank's participations in foreign subsidiaries lost approximately 60% of their value due to lower expected profits in these subsidiaries, leading to a substantial deterioration in the parent bank's capital ratios. The 60% depreciation in the value of Credit Suisse AG's foreign participations was primarily due to idiosyncratic stress in an otherwise relatively benign economic and financial market environment. In a recession or in the context of a strong real estate or financial market correction, the value of the participations would depreciate further given the systemic stress.

⁵ A participation in a financial subsidiary relates to the capital that the parent bank has granted to this subsidiary. As a participation is the most junior claim on the assets of a wholly owned subsidiary, the parent bank bears the entire risk of these assets. With a partial capital backing of the participation, the parent bank can back this risk with less capital than if it had the subsidiary's assets on its own balance sheet. Partial capital backing allows the bank to partially finance capital at a subsidiary through debt. This practice is referred to as 'double leverage'.

⁶ Operational risk is reflected by a flat-rate surcharge.

of the legacy positions will reduce UBS's risk positions and the associated costs.

Lessons from crisis at Credit Suisse

The crisis at Credit Suisse has highlighted weaknesses in the regulatory framework. The SNB shares the Federal Council's view⁷ concerning need for action in the areas of capital requirements, liquidity requirements, early intervention, and recovery and resolution planning. The proposed changes are aimed at strengthening banks' resilience and their resolvability in a crisis. The SNB is participating at both national and international level in the ongoing discussion about necessary regulatory adjustments.

In the area of capital, the focus is on remedying weaknesses in the regulatory architecture in order to ensure that reported capital ratios reflect a bank's actual loss-absorbing capacity. The SNB supports a consistent implementation of the measures proposed by the Federal Council in the following three areas of capital regulation.

First, the contribution of the Additional Tier 1 (AT1) instruments to stabilising a bank as a going concern should be strengthened. Measures should aim at ensuring a timely suspension of buybacks and coupon payments following sustained losses, as well as a write-off or conversion of these instruments into CET1 capital at a time when the bank is still able to stabilise its situation before it reaches the point of non-viability. This was not the case during the crisis at Credit Suisse. Such measures would bolster the intended purpose of AT1 instruments as going-concern capital.

Second, the prudent calculation of CET1 capital should be strengthened. The credibility of CET1 capital as a measure of financial strength relies on a prudent valuation of assets. Therefore, the calculation of CET1 capital should be adjusted for assets, such as software and deferred tax assets, that are likely to lose most of their value during a restructuring. Moreover, regulatory requirements in Switzerland with respect to prudent valuation of complex or illiquid positions should be tightened to adequately reflect the valuation uncertainty for such positions – especially in times of stress.

Third, the capital regime for parent banks should be strengthened. Under the current regime, a parent bank's participations in its subsidiaries are only partially backed by capital. As a result, standalone capital ratios of the parent bank overestimate the true resilience of its participations. This risk materialised in the case of Credit Suisse as the value of its participations fell sharply due to lower estimated profits in foreign subsidiaries, leading to a substantial deterioration of the parent bank's capitalisation. Under a robust regulatory treatment,

participations are sufficiently backed by capital. This ensures that capital that is passed on to subsidiaries cannot simultaneously be used to cover the parent bank's own risks. The Federal Council therefore proposes strengthening the capital backing for participations in foreign subsidiaries (cf. special topic in subchapter 5.3).

Even with the above-mentioned improvements to the architecture of capital regulation, regulatory ratios remain to a large extent a static measure and should be complemented by elements that contain forward-looking components, such as a bank's expected profitability. The crisis at Credit Suisse has shown that forward-looking elements can fundamentally change the assessment of a bank's resilience, particularly in times of stress. Stress tests and market indicators can supplement the current capital regulation, as they provide a more comprehensive and forward-looking assessment of a bank's resilience. In this regard, the SNB supports a stronger legal basis for institution-specific capital surcharges (i.e. Pillar 2 capital surcharges) based on forward-looking elements.

In the area of liquidity, the experience with Credit Suisse in March 2023 has shown that neither its compliance with the current liquidity requirements nor the collateral prepared by the bank for obtaining emergency liquidity assistance from central banks were sufficient to cover a sharp rise in its liquidity needs. Some of the insights have already been taken into account with the amended liquidity regulations for systemically important banks that came into force in 2022 and are applicable as of 2024. Other aspects such as heightened liquidity outflows, especially in the case of high-value retail deposits, are not addressed in the current regulations. These outflows were much faster and larger than assumed in the liquidity coverage ratio (LCR). The high proportion of very short-term funding amplified the impact of the loss of confidence. The SNB supports a review of the LCR by the Basel Committee on Banking Supervision (BCBS). According to the Federal Council's report on banking stability, the effectiveness of the new liquidity provisions for systemically important banks will be reviewed by the end of 2026 (cf. special topic in subchapter 5.1).

Furthermore, as proposed by the Federal Council, banks should be required to prepare an adequate volume of eligible collateral for obtaining emergency liquidity assistance from central banks. The SNB accepts a broad range of eligible collateral, which it reviews on an ongoing basis and develops in dialogue with the banks. The focus is on illiquid assets which the banks are unable to use at short notice during a crisis to generate liquidity. To ensure that the SNB can sell such assets in the case of non-repayment of a loan, a valid and legally enforceable security interest in favour of the SNB must be established on these assets, for example through a pledge or assignment as security. The banks must make the necessary preparations for this, in particular in relation to legal aspects such as the amendment of transfer clauses and, with regard to loans to foreign clients, securitisation. In the case of Credit Suisse,

⁷ Cf. Federal Council report on banking stability of 10 April 2024.

it was not the range of collateral accepted by the SNB and other central banks that limited the provision of liquidity assistance. Rather, the insufficient preparations made by Credit Suisse were the main factor limiting emergency liquidity assistance (cf. special topic in subchapter 5.2).

However, even with better preparation of collateral by the bank, extreme situations remain possible where a bank does not have sufficient collateral to obtain the required liquidity from the central bank. The SNB therefore supports anchoring the public liquidity backstop (PLB) in ordinary law. The PLB allows the SNB to provide a systemically important bank with additional liquidity as part of a restructuring of the bank concerned, the repayment of which is guaranteed by the federal government (cf. special topic in subchapter 5.2).

The SNB also sees a need for improvement in the area of recovery and resolution planning, and supports the proposals of the Federal Council in this regard. The early intervention toolkit should be expanded through the inclusion of market-based and forward-looking indicators and the recovery planning strengthened in order to stabilise a systemically important bank in a timely manner. Experience with Credit Suisse has also revealed potential obstacles related to the execution of a resolution, in particular legal risks and possible contagion effects in the case of a bail-in.⁸

⁸ Cf. Financial Stability Board (FSB), '2023 Bank Failures – Preliminary lessons learnt for resolution', 10 October 2023.

2 Macroeconomic and financial environment

2.1 KEY DEVELOPMENTS

Since the publication of the last Financial Stability Report in June 2023, developments in the economic and financial environment of the Swiss banking sector have been mixed.

Global economic growth has remained subdued

Overall, global economic growth has remained subdued over the past 12 months, but developments across economies have been rather heterogeneous (cf. chart 2.1). Growth has proven to be surprisingly resilient in the US, while growth dynamics in the euro area have been weak. The continued crisis in the property sector and weak sentiment have weighed on growth in China. In Switzerland, growth has remained subdued, mainly due to weak foreign demand.

Long-term interest rates are at similar levels to a year ago, inflationary pressure has decreased

Global inflation has declined strongly over the past 12 months. Whereas inflation still remains above central banks' targets in most advanced economies, in Switzerland it has returned to the range that the SNB equates with price stability (cf. chart 2.2). As inflation declined, many central banks halted the sharp rise in policy rates in the second half of 2023 and have kept them at constant levels since. In Switzerland, the policy rate has been lowered, as the inflation rate and the inflation forecast have returned to the price stability range. Global long-term nominal interest rates in most advanced economies are at similar levels to a year ago, while uncertainty about their developments remains elevated (cf. chart 2.3).

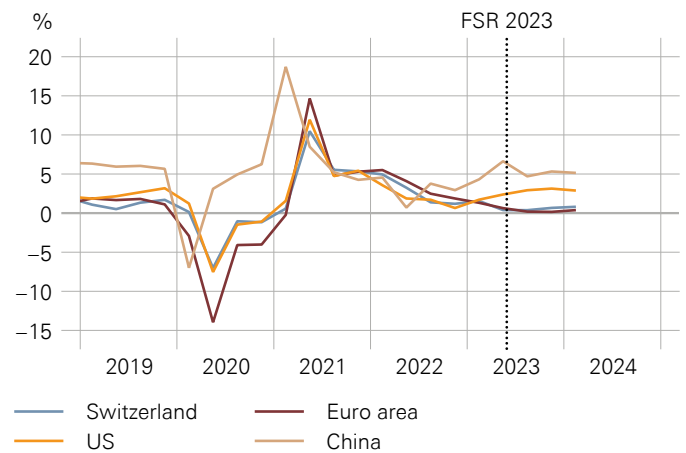
Residential real estate markets have been fairly resilient, but vulnerabilities persist

Globally, the response of residential real estate prices to the increase in interest rates over the past two years has been remarkably mild overall so far (cf. chart 2.4). While some countries, such as Germany and Sweden, have experienced significant price declines, prices have only marginally decreased or have already recovered in other countries such as the US and Australia. In Switzerland, residential real estate prices have grown at a slower pace in the owner-occupied segment and stagnated in the residential investment property segment (cf. subchapter 2.2).

GDP GROWTH

Year-on-year real GDP growth rates

Chart 2.1

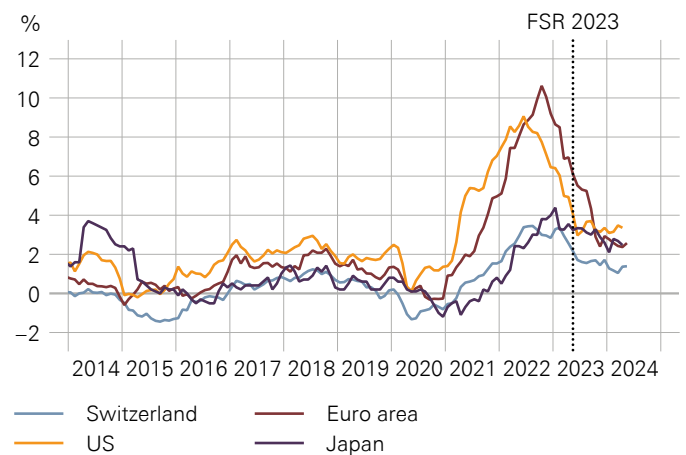


Source(s): LSEG Datastream, SECO

INFLATION

Consumer prices, year-on-year change

Chart 2.2

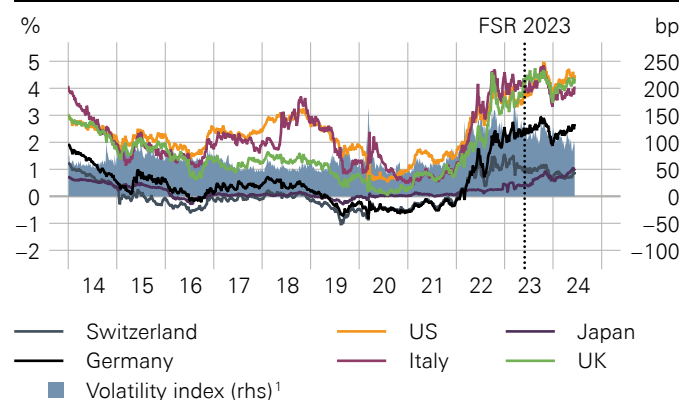


Source(s): LSEG Datastream, SFSO

LONG-TERM INTEREST RATES

Ten-year government bonds

Chart 2.3



¹ The index used is the MOVE Index, which measures the implied volatility of US Treasury options.

Source(s): Bloomberg, LSEG Datastream, LSEG Eikon

Factors which have likely mitigated the response of residential real estate markets to higher interest rates by supporting demand include strong population growth, low unemployment rates, robust household finances, and the willingness of households to spend more on housing since the pandemic.

Vulnerabilities persist in a number of major economies. The residential price-to-rent ratio, a general measure of real estate valuation, lies above its long-term average in many countries, including Switzerland (cf. chart 2.5). Furthermore, a wide range of indicators, accounting for factors such as income and interest rates, point to vulnerabilities persisting in many residential real estate markets.¹

1 Cf. European Central Bank (ECB), Financial Stability Review, November 2023, pp. 30–33.

Commercial real estate prices have declined

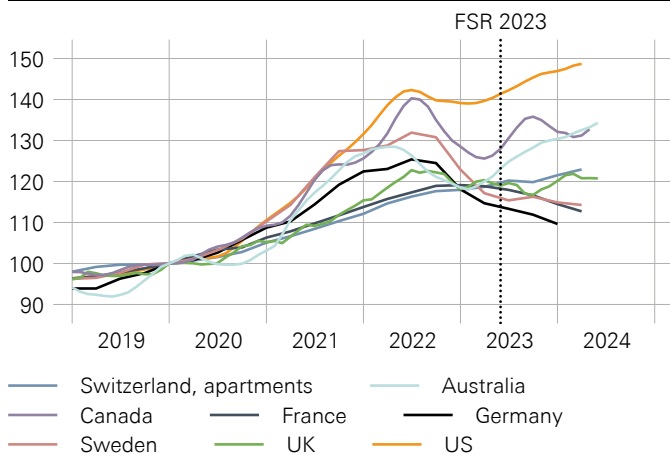
Amid rising funding costs and tighter credit conditions due to the increase in interest rates over the past two years, transaction volumes in the commercial real estate market have strongly decreased over this period.

Against this backdrop, commercial real estate prices have continued to decline, notably in the US and Germany (cf. chart 2.6). The response to higher interest rates has been amplified by the increased importance of both working from home and the mail-order business and, in Europe, by weak economic growth. Office vacancy rates have generally increased against the backdrop of the expansion in working from home (cf. chart 2.7).² In the US, price declines have been particularly strong for

2 Cf. also International Monetary Fund (IMF), Global Financial Stability Report, April 2024, p. 13.

RESIDENTIAL REAL ESTATE PRICE INDICES

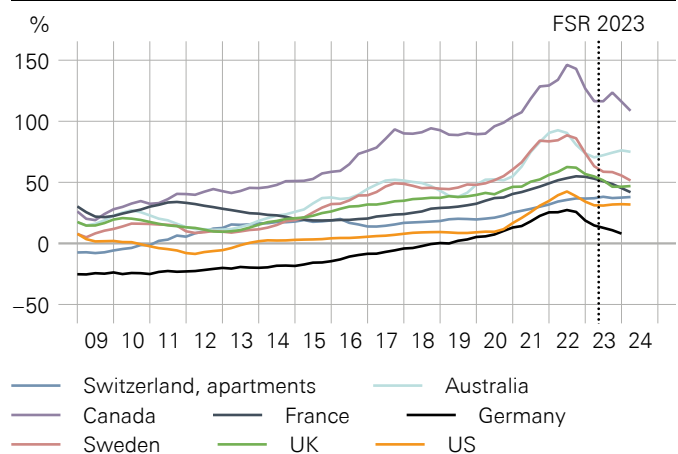
In nominal terms, Dec 2019 = 100 Chart 2.4



Source(s): LSEG Datastream, Wüest Partner

RESIDENTIAL REAL ESTATE PRICE-TO-RENT RATIOS

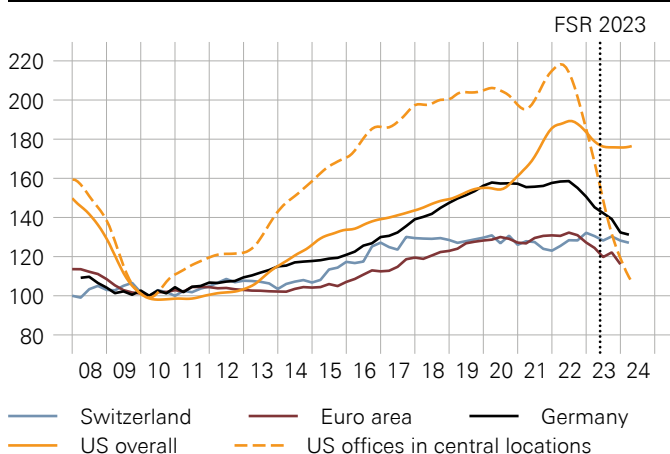
Deviation from average since 1970 Chart 2.5



Source(s): LSEG Datastream, OECD, SFSO, Wüest Partner

COMMERCIAL REAL ESTATE PRICES

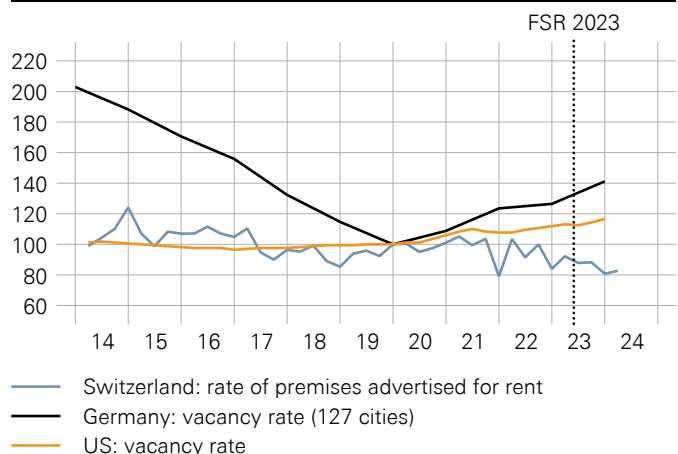
In nominal terms, Q1 2010 = 100 Chart 2.6



Source(s): BIS, LSEG Datastream, Wüest Partner

OFFICE SEGMENT: VACANCY INDICATORS

Q4 2019 = 100 Chart 2.7



Source(s): Bundesbank, LSEG Datastream, Wüest Partner

offices at central locations. These developments have led to rising defaults in the commercial real estate sector, mainly in Europe and the US.³ In Switzerland, there have been no significant reactions in the commercial segment so far, as prices have moved sideways since 2019 (cf. subchapter 2.2).

Credit market developments have been mixed

Over the past 12 months, credit market indicators have painted a mixed picture.

On the positive side, financial market indicators for credit quality have generally improved. Global credit risk premia – a market-based indicator for expected credit quality – have declined in both the sovereign (cf. chart 2.8) and the corporate segment (cf. chart 2.9).

However, indicators for global credit quality outside financial markets reveal some negative effects of higher interest rates and subdued global economic growth in a number of segments. Against the backdrop of falling commercial real estate prices, credit quality in this segment has deteriorated. In the US, loss-related indicators such as delinquency rates for commercial real estate loans have increased only moderately. However, recent academic research indicates that the share of loans to companies with negative equity has increased substantially.⁴ Similarly, in the euro area, the share of loans to loss-making real estate companies has

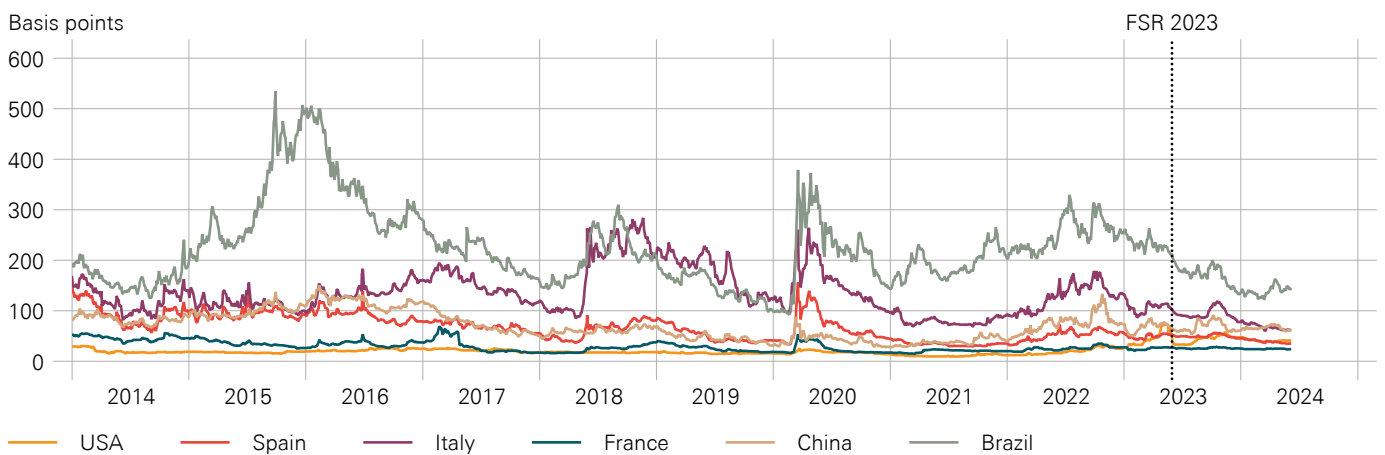
3 Cf. IMF, Global Financial Stability Report, October 2023, pp. 2, 20–21.

4 Cf. Jiang, E. X., G. Matvos, T. Piskorski and A. Seru, 'Monetary Tightening, Commercial Real Estate Distress, and US Bank Fragility', 4 April 2023 (ssrn.com/abstract=4413799). Negative equity occurs when the value of real estate property falls below the outstanding balance on the mortgage used to purchase that property.

SOVEREIGN CREDIT DEFAULT SWAP PREMIA

Premia for credit protection (five-year senior)

Chart 2.8

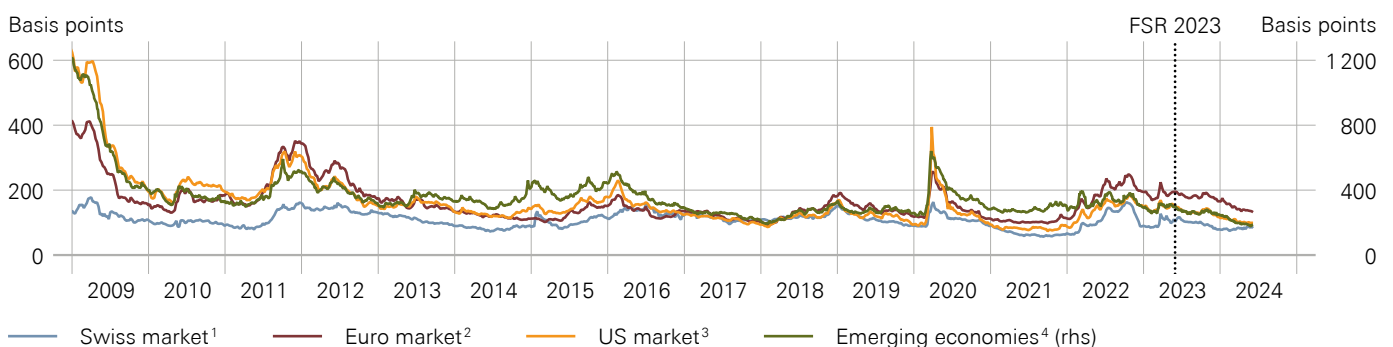


Source(s): Bloomberg, LSEG Eikon

BOND SPREADS

Yield spread between corporate and government bonds

Chart 2.9



1 Yields for Swiss investment-grade corporate bonds and for Swiss Confederation bonds (5-year maturity), calculated by the SNB.
 2 Euro-Aggregate Corporate (investment grade, 5 to 7-year maturity, EUR-denominated) and German Government (5 to 7-year maturity), Bank of America.
 3 US Corporate (investment grade, 5 to 7-year maturity, USD-denominated) and US Treasury (5 to 7-year maturity), Bank of America.
 4 Emerging Economies Corporate (USD and EUR-denominated), option-adjusted spread, Bank of America.

Source(s): LSEG Datastream, LSEG Eikon, SNB

approximately doubled since 2019 and now amounts to roughly 25%.⁵

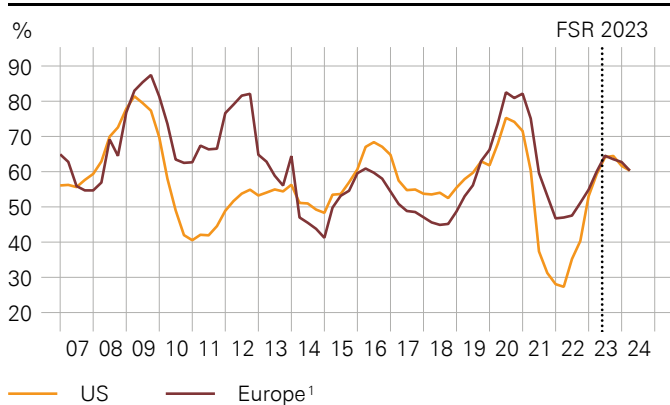
There are also some signs of declining credit quality outside the commercial real estate sector. Default rates have increased in several countries, albeit from historically low levels. After an initial deterioration, corporate ratings subsequently improved and are at similar levels to a year ago in Europe and the US (cf. chart 2.10).

Going forward, credit quality might deteriorate on a broader basis as the pass-through of higher interest rates continues, and because existing vulnerabilities could act as a shock amplifier. In both the sovereign and the corporate segments, debt relative to GDP soared globally at the beginning of the pandemic and has decreased only

5 Cf. ECB, Financial Stability Review, November 2023, p. 114.

RATING DOWNGRADES RATIO

Number of downgrades relative to total rating changes in non-financial sector, moving average over four quarters

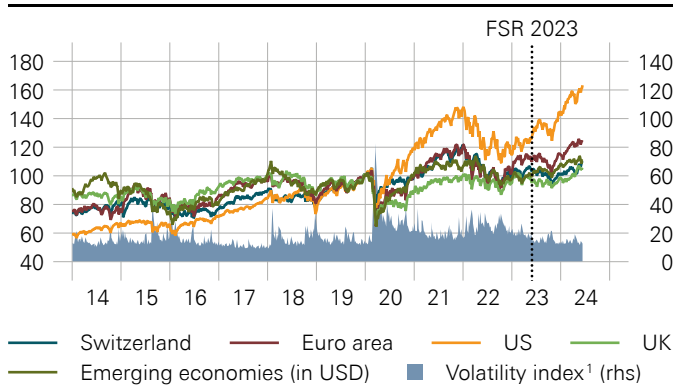


1 EU-17 countries plus Switzerland, Norway and Iceland.

Source(s): Moody's

STOCK MARKET INDICES

Datastream global indices (31 Dec 2019 = 100) and volatility



1 The index used is the VIX index, which measures the implied volatility of index options on the S&P 500 (in %).

Source(s): Bloomberg, LSEG Datastream

moderately since (cf. chart 2.11). The rise in interest rates over the past two years is gradually affecting debt servicing costs for an increasing proportion of borrowers. Coupled with real incomes still at relatively low levels due to the high inflation in recent years, this could lead to a surge in delinquency rates on loans.

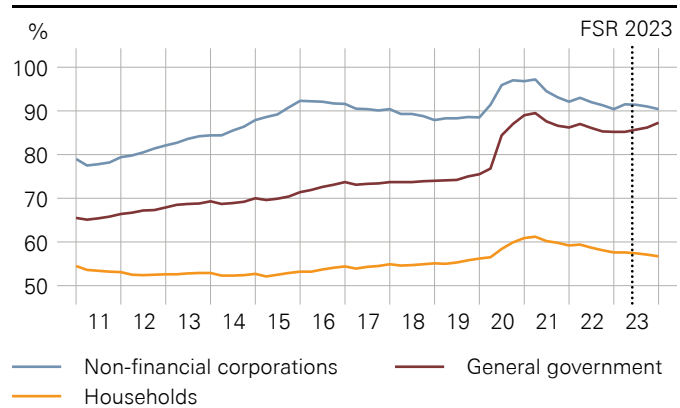
In Switzerland too, signals about credit quality are mixed. Corporate bond spreads have narrowed in line with global developments. The share of impaired loans has stayed low. While corporate bankruptcy rates remain below pre-pandemic levels, they have moved up. Going forward, the high level of private debt relative to GDP as well as affordability risks at commercial borrowers constitute relevant vulnerabilities (cf. subchapters 2.2 and 4.2.1).

Global stock prices have increased

Global stock prices have risen over the past 12 months (cf. chart 2.12). Price increases have been particularly

GLOBAL DEBT-TO-GDP RATIO¹

Chart 2.11

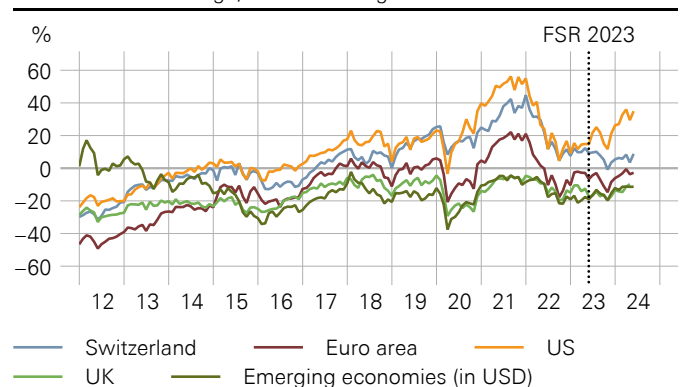


1 All reporting countries. Aggregate based on conversion to USD at purchasing power parity exchange rates.

Source(s): BIS

CYCLICALLY ADJUSTED PRICE-TO-EARNINGS RATIO

Deviation from average;¹ Datastream global indices



1 The average of earnings is calculated using a ten-year moving average. The average of the price-to-earnings ratio is calculated over the full period since 1985, or since data became available.

Source(s): IMF, LSEG Datastream

strong in the US, and comparatively weaker in the euro area, the UK and Switzerland. Stock market volatility has decreased to historical average levels. While the cyclically adjusted price-to-earnings ratio (cf. chart 2.13), a measure of stock valuation, lies significantly above its long-term average for the US, it is approximately at its average in the euro area and Switzerland.

Financial market indicators for global banking sector have improved

In line with general developments in financial markets, financial market indicators for banks have improved globally over the past 12 months. The broad-based increase in global interest rates over the past two years has allowed banks to expand their interest rate margins and to raise their profitability. For the largest banks, credit default swap (CDS) premia – market indicators of bank credit risk – have declined to historically low levels (cf. chart 2.14). While global bank stock prices have generally increased,

those of US regional banks have only partially recovered from the drop experienced in March 2023. As regards rating indicators, the ratio of rating downgrades to total rating changes has increased for US financial institutions, pointing to declining credit quality (cf. chart 2.15). For European institutions, this ratio has been broadly stable.

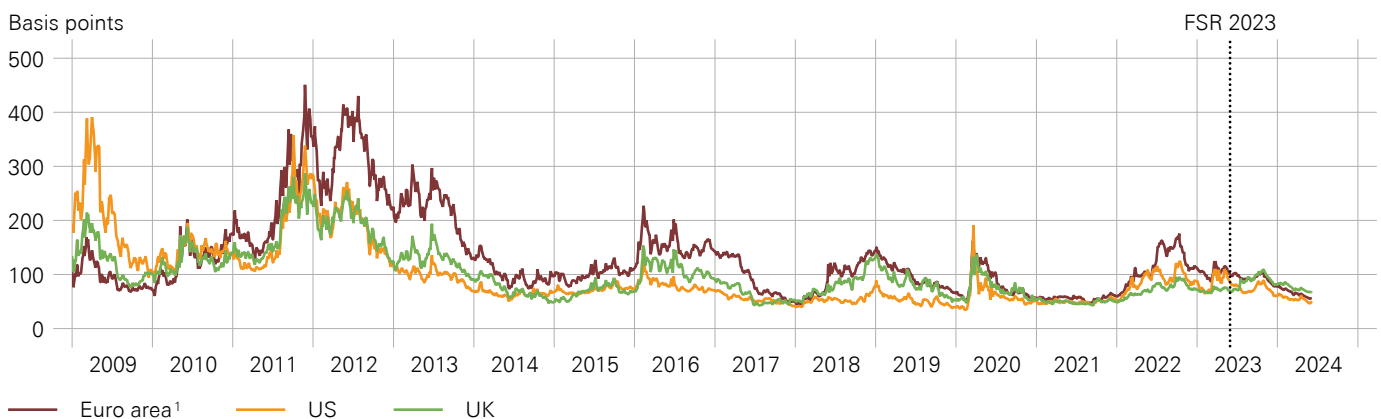
Current global environment carries risks for financial stability

Vulnerabilities in the global real estate, credit and stock markets persist and the level of debt remains high. In addition, the current high level of interest rates may result in further adverse developments in the real estate and credit markets, as historical evidence indicates that the effects of interest rate hikes may materialise with a significant time lag. The increased potential for rapid outflows of bank deposits, in particular due to advances in digitalisation and shifts in the composition of deposits, adds to global financial stability risks.

BANK CREDIT DEFAULT SWAP PREMIA

Average of biggest banks (five-year senior)

Chart 2.14



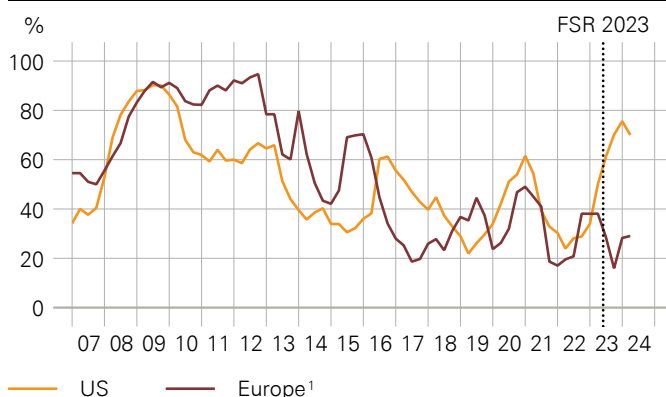
1 France, Germany, Italy, the Netherlands and Spain.

Source(s): Bloomberg, LSEG Eikon, SNB calculations

RATING DOWNGRADES RATIO

Number of downgrades relative to total rating changes in financial sector, moving average over four quarters

Chart 2.15



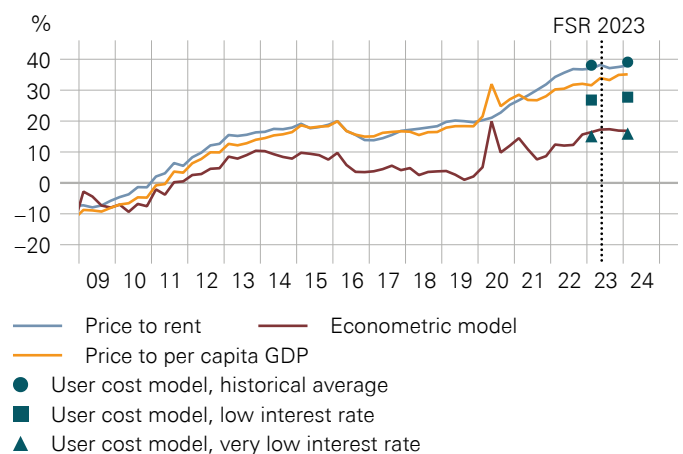
1 EU-17 countries plus Switzerland, Norway and Iceland.

Source(s): Moody's

APARTMENTS: VALUATION INDICATORS

Deviation from indicator-implied price levels

Chart 2.16



Source(s): SECO, SFSSO, SNB, Wüest Partner

2.2 SWISS REAL ESTATE AND CREDIT MARKETS

Following the increase in interest rates in 2022 and 2023, prices have grown at a slower pace in the owner-occupied segment and stagnated in the residential investment property segment. For the commercial property segment, the available price indices have continued to move sideways. Meanwhile, mortgage growth has also slowed.

The reaction of the Swiss residential and commercial real estate markets to higher interest rates has been more muted than in other countries. The comparatively small increase in interest rates has likely played a key role. However, vulnerabilities in the residential real estate market persist and, as in other countries, the pass-through of higher interest rates to the real estate market may not yet be complete.

Vulnerabilities on residential real estate market persist

Transaction price indices for single-family houses and apartments indicate that, overall, the pace of price growth in the owner-occupied residential real estate market slowed further between Q1 2023 and Q1 2024, but remained positive. Year-on-year transaction price growth declined from 3.6% to 1.6% for single-family houses, and remained broadly unchanged at 3.6% for apartments.⁶

For the residential investment property segment, price indices overall suggest that prices have increased slightly but remain below the peak levels observed in 2022.

Year-on-year growth of transaction prices for apartment buildings increased from -1.3% in Q1 2023 to 2.0% in Q1 2024.⁷ There has been heterogeneity in the development of price indices for the residential investment property segment since the increase in interest rates in 2022 and 2023, with some indicators showing a significant price decline and others signalling merely slower price increases.

Vulnerabilities persist in both the owner-occupied and investment property segments of the residential real estate market. Between Q1 2023 and Q1 2024, they remained largely unchanged.

Uncertainty regarding the appropriate valuation level of real estate according to these indicators is high, though. For the apartment segment, simple valuation metrics, such as the ratios of price to rent and price to per capita GDP, have reached levels that are around 35–40% above their historical averages (cf. chart 2.16). According to model-based indicators taking into account a broader set of economic factors (e.g. income and interest rates in addition to GDP and rents), current prices are around 15–40% above their model-implied levels.

6 Source: Wüest Partner. According to the Swiss Federal Statistical Office (SFSO) indices, year-on-year price growth slowed from 4.1% in Q1 2023 to 0.5% in Q1 2024 for single-family houses, and from 3.8% to 2.4% for apartments.

7 Source: Wüest Partner.

The upper and lower ends of this range are given by the ‘user cost’ model.⁸ This forward-looking metric is sensitive to assumptions regarding the development of interest rates and rents over the very long term. Assuming that the real mortgage rate returns to its average for the past 50 years (2.5%, ‘historical average’), market prices for apartments are around 40% above the level that can be explained by fundamental factors. By contrast, assuming an environment of very low interest rates with a real mortgage rate of 1.0% (‘very low interest rate’), the corresponding deviation is about 15%.

A further estimate is provided by an econometric model⁹ that explains real estate prices based on their historical relationship with per capita GDP, the stock of residential buildings per capita and the real long-term interest rate. Current prices are around 15% above the level implied by this model.

When interpreting these figures, it is important to bear in mind that due to data limitations they do not capture all demand and supply factors that can affect the residential real estate market. For example, the high and rising share of already built-up residential areas, coupled with slow advances in high-density construction, has contributed to the tightness of supply.¹⁰ At the same time, growth in the number of households has been higher than population growth in recent years, as the average household size has decreased.

In the absence of sufficiently long time series, the impact of these demand and supply factors cannot be fully modelled. As these factors probably explain part of the price growth observed in recent years, the indicators described above may overestimate vulnerabilities in the domestic residential real estate market.

Risks in residential investment property higher than in owner-occupied segment

Although vulnerabilities are visible across all segments of the residential real estate market, the likelihood and potential scale of price corrections appear to be greatest in the investment property segment.

8 In the user cost model, the costs for a tenant (i.e. rents) must be equal to the costs for a property owner (mortgage payments, maintenance costs, and taxes minus expected appreciation of the property). For a description of the user cost model, cf., for example, Poterba, J. M. (1984), ‘Tax Subsidies to Owner-Occupied Housing: An Asset-Market Approach’, *The Quarterly Journal of Economics*, 99(4), pp. 729–752. In the ‘historical average’ version of the user cost model, long-term expectations for the real mortgage rate are set to the corresponding historical average of 2.5%; in the ‘low interest rate’ and ‘very low interest rate’ versions, the expected real mortgage rate is set to 1.5% and 1.0%, respectively.

9 For a description of the econometric model, cf., for example, Cuestas, J. C., M. Kukk and N. Levenko (2021), ‘Misalignments in house prices and economic growth in Europe’, Working Papers, 2021/07, Economics Department, Universitat Jaume I, Castellón, or Muellbauer, J. (2018), ‘Housing, debt and the economy: a tale of two countries’, *National Institute Economic Review*, National Institute of Economic and Social Research, vol. 245(1), August, pp. 20–33. A similar model is also used by the European Central Bank (cf. ECB, *Financial Stability Review*, May 2022, p. 34, and ECB, *Financial Stability Review*, November 2015, pp. 45–47).

10 Cf., for example, Raiffeisen Group, *Immobilien Schweiz*, Q4 2023, p. 4.

First, the peak deviation from levels which can be explained by fundamental factors is highest in this segment.

Second, the likelihood that prices will decline in response to the increase in interest rates is also highest in this segment, as return considerations play a central role for investors. If the currently compressed spread between yields on residential investment property and yields on government bonds (cf. chart 2.17) were to be restored to its multi-year average, yields for residential property investments would have to increase considerably. Such an increase in yields would require significantly lower prices, significantly higher rents, or a combination of both.¹¹ Declining vacancies (cf. chart 2.18), as well as a potential lagged pass-through of rising interest rates and of consumer price inflation to rents, as allowed by rental law, imply that rents could indeed increase further. However, the upward potential for rents appears too small to restore risk premia entirely. This implies that a substantial price decline would probably be part of the adjustment.¹² For subsegments where yields have already increased, there is indeed evidence that price declines have played a prominent role.¹³

Third, experience shows that in a downturn, commercial investors with limited liability, such as real estate companies, default on their debt more quickly than private

property owners, who are liable with all their assets (cf. SNB Financial Stability Report 2023, p. 17, and 2022, pp. 35–36). This can lead to a surge in fire sales and amplify potential price corrections in the residential investment property segment.

Conditions in commercial real estate segment broadly stable

Data availability for the commercial real estate segment is more limited than for the residential segments.¹⁴ The available indicators point to broadly stable conditions in the commercial segment overall. Price indices, which have moved sideways since 2019, have shown no trend change since the increase in interest rates in 2022 and 2023.¹⁵ However, the number of mortgage-financed transactions was lower in 2023 and in Q1 2024 compared to 2022. This reflects reduced market liquidity, possibly due to a mismatch between buyers' and sellers' expectations regarding the eventual impact of the higher interest rates on prices.

In the commercial rental market, there are no clear indications of a deterioration either. Rent indices present a heterogeneous picture. The share of premises advertised for rent has decreased since 2022, particularly for the office segment. Subdued construction activity contributed to this development.¹⁶ However, the decrease in advertised premises also suggests that there is no oversupply in this market and/or that demand is relatively stable.¹⁷ Other

11 For example, an increase in net yields from 3% to 4% would require net rental income to increase by 33%, prices to decrease by 25%, or a combination of increasing net rental income and decreasing prices.

12 At current mortgage rates, an increase in the mortgage reference rate of 100 basis points allows an increase in rents of up to 12%, depending on whether past declines in the reference rate have been passed on to tenants. Note that the reference rate-induced increase in property owners' net rental income will be somewhat higher than the increase in rents (i.e. owners' gross rental income). In some tenancies, owners may be able to impose higher rent increases, for example due to low regional vacancy rates or renovation work. However, in other tenancies, the actual extent of possible rent increases might be lower than allowed by regulation, for example in peripheral areas still experiencing high vacancy rates.

13 This is true for data on the prime residential segment provided by Wüest Partner and for data on new apartment buildings provided by Fahrländer Partner.

14 For example, there are fewer price indices available for the commercial real estate segment than for the residential segments, and the existing ones are more volatile and based on fewer observations. A new loan-by-loan dataset which the SNB and FINMA will introduce to close existing data gaps and replace existing surveys (cf. subchapter 4.2.1) might also improve the data situation for the commercial real estate segment.

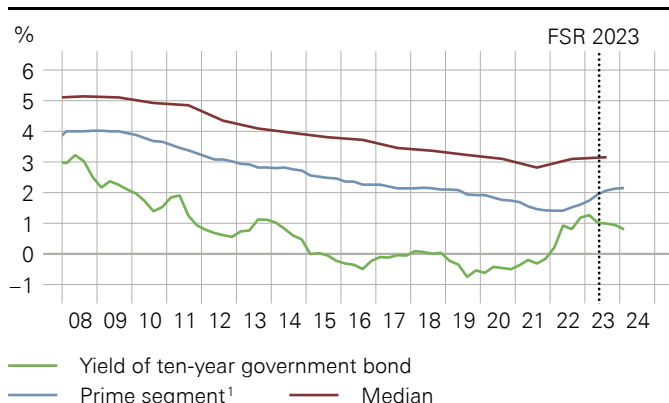
15 Sources: Fahrländer Partner and Wüest Partner.

16 Cf., for example, Wüest Partner, Immo-Monitoring 2024/1 Winter Update, p. 24, and Fahrländer Partner, FPReview Q1 2024, p. 47.

17 While there is evidence that the rate of foregone rental income from office premises has increased (cf. Wüest Partner, Immo-Monitoring 2024/2, p. 44), vacancy rate estimates for the Swiss office segment signal lower current vacancy rates than at the beginning of the pandemic (cf. Raiffeisen Group, Immobilien Schweiz, Q4 2023, p. 15).

INITIAL YIELDS OF RESIDENTIAL REAL ESTATE

Yields of direct real estate investments vs. benchmark Chart 2.17 rates

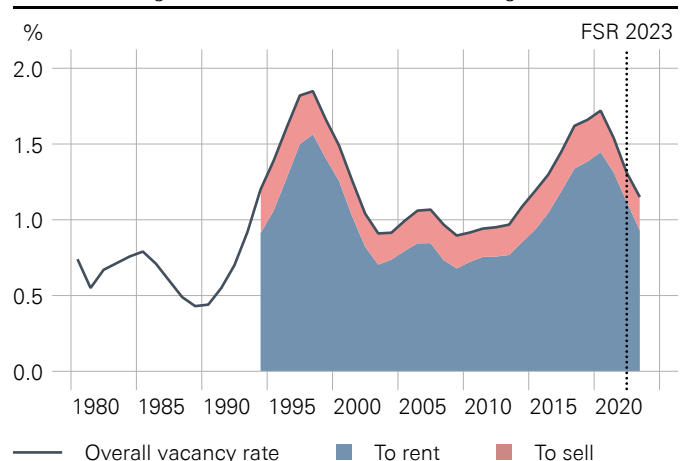


1 Average of Basel, Berne, Geneva, Lausanne, Zurich.

Source(s): SNB, Wüest Partner

RESIDENTIAL VACANCY RATE

Vacant dwellings relative to total number of dwellings Chart 2.18



Source(s): SFSO, SNB

indicators for rental demand send similar signals: Year-on-year employment growth was slightly positive both in office-intensive sectors and in the retail sector in Q1 2024, and retail sales were similar to the levels recorded at end-2022. For the office segment, the share of premises advertised for rent is currently lower than it was at the beginning of the pandemic, indicating that the expansion in working from home has had a limited effect so far. Many other countries have experienced rising vacancy rates since the pandemic against the backdrop of the increase in working from home (cf. chart 2.7 in subchapter 2.1).

In contrast to the residential real estate segment, there is no clear evidence of substantial deviations from fundamental values for the commercial real estate segment. Commercial real estate prices have increased less over the past 15 years and yields are higher than in the residential segment. Nonetheless, as the spread between initial yields and risk-free interest rates remains compressed compared to the last decade, some downward pressure on prices might persist going forward. More generally, this segment tends to be more sensitive to the business cycle than the residential segment.

Pass-through of higher interest rates to real estate market may not yet be complete

The reaction of the Swiss residential and commercial real estate markets to higher interest rates has been more muted than in other advanced countries. Within the commercial segment, the office segment in particular has proven to be more robust (cf. subchapter 2.1 for developments abroad). The comparatively small increase in interest rates in Switzerland is likely to have played a key role in this context. Moreover, the increase in interest rates on new mortgages has been less pronounced than the increase in risk-free rates.

However, as in other countries, the pass-through of higher rates to the Swiss real estate market may not yet be complete. First, experience shows that real estate markets tend to react with a time lag to changes in interest rates. One reason is that the impact of higher interest rates on mortgage service costs is only gradual as interest rates on new loans are locked in for up to ten years. This means that mortgage rates on the outstanding stock of mortgages only change slowly. In addition, interest rates have declined again, particularly since end-2023, which could dampen this impact to some degree. Second, in the residential segment, prices are significantly higher than justified by fundamentals, and yield spreads in the income-producing segments remain compressed. This exerts downward pressure on prices. Third, in the commercial segment, due to the low number of transactions, prices may not yet fully reflect current interest rates.

Potential future price declines could be gradual. Given positive inflation rates, they could occur in real terms, without involving significant nominal adjustments. However, from a risk management perspective, it is prudent to take into account the risk that abrupt and

substantial nominal price corrections could occur in the medium term, especially in the event of large interest rate increases. Such corrections would lead to a deterioration in the quality of banks' mortgage portfolios, as depicted in the interest rate shock scenario (cf. subchapter 4.3).

Mixed signals on risk situation in mortgage market

Year-on-year mortgage growth in the Swiss banking sector as a whole slowed between Q1 2023 and Q1 2024 (from 3.3% to 2.3%).¹⁸ The slowdown in mortgage growth was mainly due to households, which make up 73% of total mortgage loan volume in Switzerland and for which the corresponding growth rate declined from 2.5% in Q1 2023 to 1.6% in Q1 2024. For companies in the real sector,¹⁹ which make up 24% of total mortgage loan volume, growth slowed too (from 4.2% in Q1 2023 to 3.3% in Q1 2024). For financial sector and real estate companies, mortgage growth remained higher than for the mortgage market as a whole.

Against the backdrop of slower mortgage and GDP growth, the mortgage-to-GDP ratio was broadly stable between Q1 2023 and Q1 2024. The same is true for the difference, or 'gap', between this ratio and its long-term trend – a measure of vulnerability. While the ratio remains above pre-pandemic levels and is high by historical standards, the gap is currently negative as the ratio has been growing at a slower rate than its long-term trend.

With regard to credit quality, there continue to be signs of elevated affordability risks as measured by the loan-to-income (LTI) ratio, most notably regarding mortgage lending to commercial borrowers (cf. LTI section in subchapter 4.2.1). While for households, evidence from tax data suggests that financial resilience is higher and has deteriorated less than the LTI figures indicate (cf. SNB Financial Stability Report 2022, pp. 35–36), no comparable data are available for commercial borrowers.

2.3 FINANCIAL STABILITY AND CLIMATE CHANGE

The SNB monitors climate-related risks to financial stability. Climate change could affect banks' traditional core business – for example, as a result of write-downs on loans or trading losses caused by valuation adjustments in stock markets.²⁰

From a financial stability perspective, the SNB focuses on whether the banking system and systemically important financial market infrastructures are adequately prepared for potential climate-related shocks. There are essentially

¹⁸ The mortgage growth calculations account for corrections made at bank level. Consequently, they may deviate from information published on the SNB's data portal, data.snb.ch. Mortgage growth at insurers (excluding reinsurers) amounted to –4.9% in 2023. At pension funds, for which the latest available figures are for the year 2022, mortgage growth was 5.5%. The overall market share of non-banks, i.e. insurers and pension funds, in outstanding domestic mortgages remained small – at around 3% for insurers and around 2% for pension funds in 2022.

¹⁹ Private non-financial sector.

²⁰ For an overview of climate risks in the context of financial stability, cf. BIS, 'The green swan', January 2020.

two key types of risks induced by climate change: transition risks and physical risks.

Transition risks are the risks associated with transitioning to a low-carbon economy. New laws and regulations as well as technological innovations can lead to disruptions in the economy. For example, a sudden and strong increase in emission taxes or a ban on carbon-intensive production processes could threaten the viability of companies or entire industrial sectors.

Physical risks are risks associated with an increase in the frequency and severity of climate-related natural catastrophes, including weather events (storms, floods, droughts, etc.) as well as longer-term environmental changes (rising sea levels, changes in precipitation patterns, etc.). For example, storms can damage production facilities and infrastructure, leading to declines in economic output.

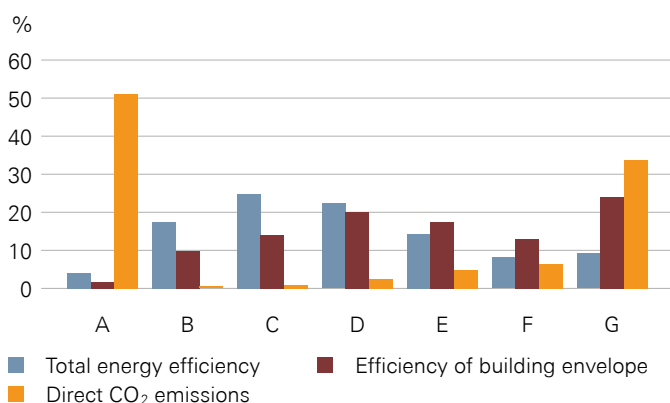
Banks in Switzerland may be exposed to both transition and physical risks. Hence, the SNB explores the relevance of both sources of risk from a financial stability viewpoint. In a first step, priority has been given to transition risks.

Climate risks can affect DFBs' mortgage portfolios

Alongside the traditional risk factors for mortgages in Switzerland, such as the effects of interest rate rises and declines in real estate prices, climate developments can represent an additional risk factor. Mortgages are the most significant assets at domestically focused banks (DFBs). For the analysis of climate risks, the SNB is in dialogue with the Swiss Financial Market Supervisory Authority (FINMA), the State Secretariat for International Finance, the Federal Office for the Environment (FOEN), the Federal Statistical Office (SFSO), the Federal Office of Energy and external experts in the field. An important part of this work is identifying key data gaps and closing them in a timely manner.

ENERGY EFFICIENCY OF BUILDINGS IN SWITZERLAND BY CLASSIFICATION (A–G)

Percentage of buildings with specific characteristics in 2024 Chart 2.19



Source(s): GEAK, SNB

Transition risks in the mortgage market could materialise if, for example, new laws or regulations require property owners to renovate the underlying real estate in order to achieve a certain minimum standard of energy efficiency. Such policy measures have been implemented in the UK and are being discussed in the EU. In Switzerland, measures proposed in the revised CO₂ legislation aim at replacing fossil-fuel heating sources in order to limit direct CO₂ emissions. Measures to improve the energy efficiency of buildings are currently at the discretion of the individual cantons.

Estimates indicate that, in Switzerland, around 55% of all buildings do not have sufficient energy efficiency, defined as a minimum 'C' label classification according to the cantonal energy certificate for buildings (GEAK, cf. chart 2.19). Furthermore, it is estimated that fossil-fuel heating systems are used in approximately 50% of all buildings (cf. chart 2.19, 'direct CO₂ emissions'). Empirical evidence also shows that the energy efficiency of buildings in Switzerland is strongly dependent on the quality of a building's envelope, and that buildings with non-fossil heating systems do not necessarily have a high energy efficiency.

To estimate the potential materiality of transition risks on banks' mortgage exposures, two adverse scenarios are taken into consideration: (i) a scenario in which all heating systems are required to become non-fossil (ban on direct CO₂ emissions), and (ii) a scenario in which the energy efficiency of buildings must be upgraded to at least the 'C' level.²¹ Both scenarios are assumed to occur 'overnight', similar to the adverse 'sudden wake-up call' scenario of the Network for Greening the Financial System (NGFS).²² The impact of the scenarios is defined in terms of the property owner's costs to renovate a building envelope or to replace a heating system relative to real estate market prices. This in turn can affect the quality of a bank's mortgage portfolio through the resulting impact on the values of the buildings securing mortgages and/or on affordability risks due to the reduction in the borrowers' available income for debt servicing.

Preliminary estimates indicate that the average impact of both scenarios on banks' mortgage portfolios would be modest when compared to the impact of the macroeconomic stress scenarios used by the SNB to assess the banks' resilience (cf. subchapter 4.3.1). Still, the results also show that the costs – and hence the potential credit risk – resulting from increasing the minimum energy efficiency of buildings (scenario (ii)) are multiple times higher than the costs incurred by just changing the heating system to non-fossil (scenario (i)). Moreover, the materiality of those costs would be larger if the bank had not properly accounted for the low energy efficiency of a property when

21 The materialisation of such scenarios would be subject to the political process in Switzerland, and the SNB does not make any statement as to the necessity or desirability of certain regulations.

22 Cf. NGFS, 'Conceptual note on short-term climate scenarios', October 2023.

estimating its value and the corresponding loan-to-value (LTV) ratio.

The data currently available allow only an aggregate estimation of the transition risks on the Swiss mortgage market. Data at the loan/bank level are necessary to evaluate the impact of transition risks on individual banks' mortgage portfolios. Moreover, the current scenario analysis is based on extrapolations from GEAK data. This is because no public data are yet available on the overall energy efficiency of individual buildings. Furthermore, public data on heating systems available from the Federal Register of Buildings and Dwellings (RBD) are largely outdated.²³ Hence, extrapolations based on GEAK data are a more reliable source than the RBD despite its high coverage of the Swiss housing stock – even for scenario (i).

As part of the reform of the credit statistics, the SNB is considering collecting granular data from banks on buildings securing mortgage loans (cf. subchapter 4.2.1). Ideally, such data would include reliable data on the energy efficiency of buildings, a key determinant of climate-related transition risks for the mortgages secured by these buildings. A FINMA survey in 2023 showed that the banks have information on energy efficiency for just a fraction of the loans. They use existing GEAK classifications in only very limited cases. The data situation should gradually improve as banks collect data on the energy efficiency of buildings as part of their risk management practices. In 2022, the Basel Committee on Banking Supervision (BCBS) clarified that banks should account for a possible change in value emerging from climate-related financial risks when calculating the LTV for mortgage loans.²⁴

Overall, publicly available data need to be improved to enable a more robust assessment of the materiality of transition risks for mortgage loans, from a financial stability and risk management perspective. A first step is to ensure that the RBD data on heating systems are kept up to date. Currently, the FOEN and the SFSO are working intensively towards this goal. A second step would be to expand the RBD to include data on the energy efficiency of individual buildings.

FINMA and the SNB have launched follow-up project to improve assessment of transition risks at UBS

In 2022, the SNB, together with FINMA and the University of Zurich, concluded a pilot project to measure climate-related transition risks at UBS and Credit Suisse. The analysis showed that, aggregated across both banks, about one-quarter of the portfolios analysed were exposed to climate policy-relevant sectors. These are classified as 'fossil-fuel', 'transportation', 'utility' and 'energy-intensive'. Compared to the market as a whole (market capitalisation of a global equity index from a major financial data provider), the banks' exposures to these sectors are similar or lower. In order to improve the assessment of UBS's transition risks, FINMA and the SNB have launched a follow-up project.

The follow-up project is again based on the transition scenarios developed by the NGFS and covers business loans, equities and corporate bonds, including related derivatives. The scenarios' impacts on these financial instruments (shocks) will be derived from model calculations produced by a well-established climate scenario data provider that has been evaluated and selected to support the project. UBS will apply these shocks to its portfolios and calculate the resulting loss potential. The analysis will be conducted at the level of individual companies in the bank's portfolio. Some of the tools used during the previous project will continue to serve as a benchmark.

The follow-up project allows for a more robust assessment of the materiality of the bank's transition risks. First, the results and methodologies can be compared with those of the pilot project, thus improving their interpretation. Second, the higher granularity of the analysis will allow company-specific characteristics to be taken into account, such as the energy mix used for production, individual transition plans, and the level of financial indebtedness.

²³ Only two cantons publish timely data. At the national level, about half the published data appears to be outdated (cf. RBD, www.housing-stat.ch/monitoringnrj/?version=1712185851&lang=de#).

²⁴ Cf. BCBS, 'Frequently asked questions on climate-related financial risks', 8 December 2022, p. 5.

3 Structure of the Swiss banking sector

The large banking sector in Switzerland is the key provider of financial services to the Swiss economy. Banks mostly operate in the traditional deposit and lending business, offering what are referred to as systemically important functions.¹ Total banking sector assets stood at roughly CHF 3,400 billion as at end-2023. This is equivalent to around 430% of Swiss GDP. To put these figures into perspective, the banking sectors of the UK and the US account for around 340% and 100% of GDP, respectively. The high ratio in Switzerland is predominantly driven by the size of its largest bank, UBS, a global systemically important bank (G-SIB). Other aspects, such as the fact that mortgage loans in Switzerland are typically not fully amortised,² also play a role. The Swiss banking sector accounts for around 5% of value added in Switzerland, and employs approximately 110,000 people.³

Structure of Swiss banking sector is heterogeneous
Out of the 208 banks operating in Switzerland as at end-2023, the SNB primarily focuses on UBS and the domestically focused banks (DFBs) in its assessment of financial stability. The category of DFBs⁴ consists of 87 banks, among them PostFinance, Raiffeisen Group and Zürcher Kantonalbank (ZKB) as well as some smaller regional and cantonal banks. In this report, the SNB subsumes the remaining 120 banks that operate in the Swiss banking sector into the category of ‘Other banks’. This category includes domestic banks that are mainly active in wealth management as well as branches and subsidiaries of foreign banks chiefly providing corporate finance and wealth management services.

Among these banks, UBS, PostFinance, Raiffeisen Group and ZKB are classified as systemically important. Systemically important banks are those whose failure could cause serious damage to the Swiss economy and Swiss financial system on account of their size, their interconnectedness with the economy and the financial system, as well as their services, which cannot be substituted at short notice.⁵ The SNB is formally in charge of designating banks as systemically important for the country, which renders these institutions subject to tighter regulatory requirements under the Banking Act.⁶ In addition, at the international level, UBS is classified as a G-SIB by the Financial Stability Board (FSB). Following its acquisition of Credit Suisse in 2023, UBS is the only remaining globally active bank headquartered in Switzerland. In November 2023, UBS was moved into a higher bucket within the FSB’s classification of G-SIBs, implying higher capital surcharges.

1 The systemically important functions comprise, in particular, the domestic deposit and lending business as well as domestic payment transactions.

2 For a discussion of the risk implication of high mortgage loan levels in Switzerland, cf. subchapter 2.2.

3 According to SNB data, employment in the banking sector fell slightly after 2005, but it recently returned to approximately 110,000 on a consolidated basis, similar to its pre-2005 level. Data are only available from 2005 onwards.

4 Banks with a share of domestic loans to total assets exceeding 50% or which play a prominent role in the domestic deposit market.

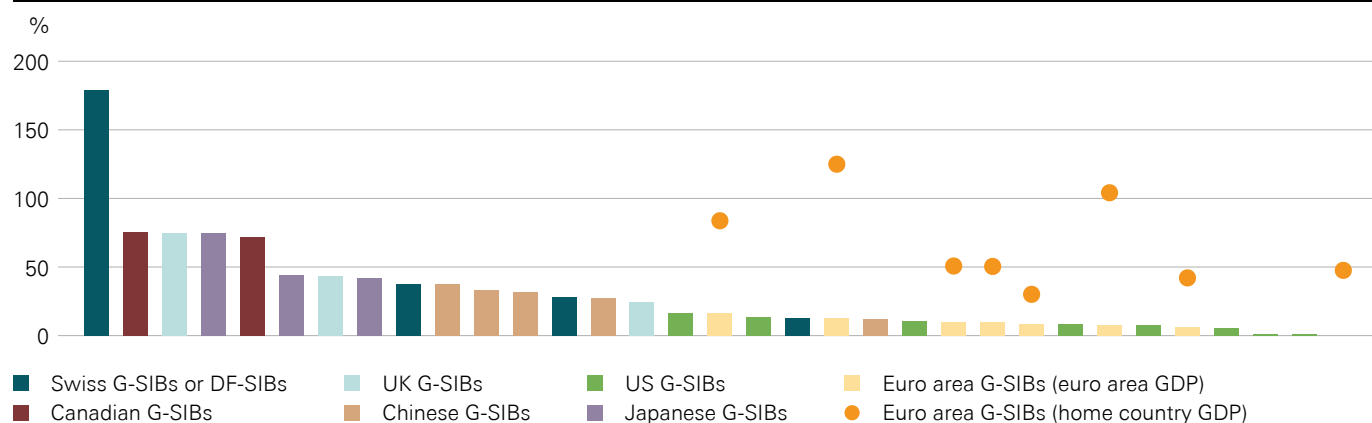
5 Cf. arts. 7 and 8 Banking Act.

6 These special requirements include higher capital and liquidity requirements as well as specific requirements for resolvability in a crisis (cf. art. 9 Banking Act).

SIZE OF INDIVIDUAL BANKS RELATIVE TO GDP, BY JURISDICTION¹

G-SIBs and Swiss DF-SIBs, leverage ratio exposure to GDP

Chart 3.1



1 GDP data for 2023 except for Japan where 2022 data were used instead. Bank exposures as at Q4 2023.

Source(s): Bank disclosures, IMF, SNB calculations

UBS stands out as a G-SIB

The systemically important banks contribute substantially to the large size of the Swiss banking sector. As a measure of bank size, UBS's leverage ratio exposure⁷ accounted for about 179% of Swiss GDP as at Q4 2023 (cf. chart 3.1). By comparison, the largest Canadian, UK and Japanese banks all made up about 75% of their respective home country's GDP. The three domestically focused systemically important Swiss banks (DF-SIBs) are also large by international standards. Relative to the Swiss economy, Raiffeisen Group's and ZKB's respective exposures come to around 38% and 28% of Swiss GDP, thereby exceeding the largest US and euro area banks.

The international business of UBS boosts its size and sets it apart from the DF-SIBs. Its large foreign asset share stems from the bank's global business operations, which are conducted either from within Switzerland or through affiliates abroad. As at end-2022, UBS held about 60% of its total claims against foreign counterparties.⁸ When compared to other G-SIBs, UBS ranks just behind UK

⁷ Leverage ratio exposure is the sum of on and off-balance-sheet positions as defined in the Basel III leverage ratio framework. For euro area banks, figures are expressed relative to the euro area GDP since these banks are part of the European Banking Union and of the Single Resolution Mechanism (SRM). In the event of a crisis, these banks have access to centralised funding and recapitalisation schemes which are instituted at the level of the euro area (cf. www.srb.europa.eu/en/content/srb-banking-union). Figures relative to the home jurisdiction's GDP (cf. orange dots in chart 3.1) are also included as an alternative benchmark, to reflect the national setup of deposit insurance schemes in the euro area.

⁸ Based on the latest cross-jurisdictional exposures that banks reported to the Basel Committee on Banking Supervision (BCBS) for its G-SIB score calculations in November 2023 using end-2022 data. The underlying assumption is that the international impact of a bank's distress varies in line with its share of cross-jurisdictional assets and liabilities. The greater a bank's global reach, the more difficult it is to coordinate its resolution and the more widespread the spillover effects from its failure (cf. www.bis.org/bcbs/gsib). For euro area banks headquartered in a member state of the SRM, cross-jurisdictional activities within the SRM are excluded from foreign exposures to acknowledge the progress made in the development of the European Banking Union. For the two UK banks whose relative foreign exposures surpass that of UBS, it should be noted that the larger one operates under the 'multiple point of entry' (MPE) regime, while the other operates under the 'single point of entry' (SPE) regime like UBS. Banks adopting an SPE regime avoid localised ring-fencing of foreign subsidiaries while planning for the resolution authority in their home jurisdiction to bail in debt and recapitalise a single parent company in the event of failure.

banks, whose relative cross-jurisdictional exposures also exceed those of other G-SIBs (cf. chart 3.2). When compared to other Swiss banks, UBS clearly stands out. The corresponding share of foreign to total assets reached only about 5% for the DFBs. In the case of the 'Other banks', a little more than half of their assets were held vis-à-vis foreign counterparties, mainly reflecting the international customer base of these specialised banks.

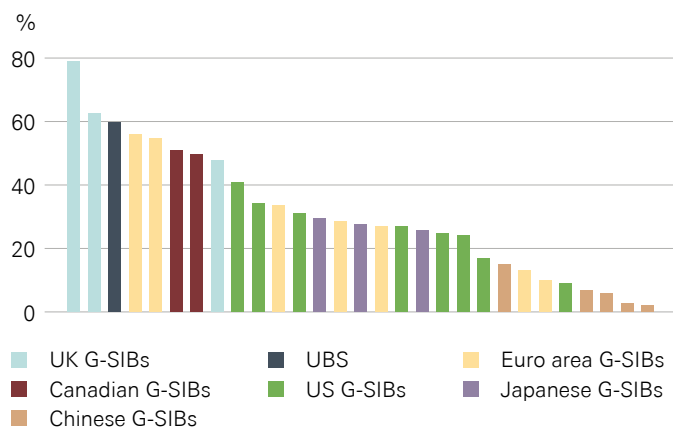
The structure of the banks' balance sheets in terms of currency composition also varies considerably across banks. For the DFBs, the Swiss franc clearly dominates on the liabilities side of their consolidated balance sheets (cf. chart 3.3). For UBS, foreign currencies play a much more important role. Less than 30% of its total liabilities were denominated in Swiss francs as at end-2023. At UBS, the US dollar ranks first, making up almost 50%, while euro-denominated liabilities account for about 13%. Overall, UBS's balance sheet mirrors the global services it offers to its clients. In terms of currency ratios, the category of 'Other banks' is also more diversified than the DFBs.

The US stands out as the most important debtor country across all banks located in Switzerland. Foreign claims on counterparties in the US accounted for around 40% of total foreign claims as at end-2023. The UK is the second-largest debtor country of banks in Switzerland, making up about 9%. Ranking far behind in terms of single-country exposures are Germany, France and Luxembourg.

In the Swiss home market, the systemically important banks account for more than half of the traditional deposit and lending business volume. After the acquisition of Credit Suisse by UBS, the combined entity has become the most important player with nationwide market coverage, followed by Raiffeisen Group. ZKB and PostFinance rank next in terms of total domestic market share, although their business models differ. PostFinance has a national presence, but operates under restrictions in the lending business, which explains its low market share in total

G-SIB FOREIGN EXPOSURES

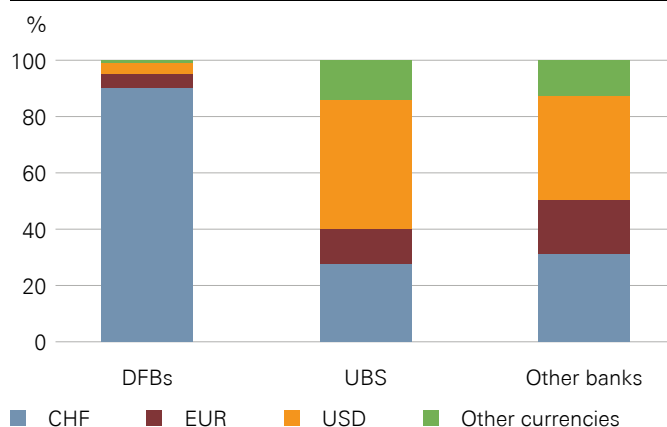
Foreign exposures as a percentage of total exposures, as at end-2022 Chart 3.2



Source(s): BIS, European Banking Authority, SNB calculations

CURRENCY BREAKDOWN OF SWISS BANKS' LIABILITIES

2023 Chart 3.3



Source(s): SNB, UBS Annual Report

domestic lending. The other DFBs collectively account for around half of the domestic credit market and one-third of the domestic deposit market. The ‘Other banks’, including subsidiaries of foreign banks, make up less than 10% of domestic lending and domestic deposits, respectively.

While UBS’s nationwide market share in the domestic deposit and lending business is the highest overall, its competitors’ shares vary across region and segment of the credit market. For instance, ZKB is a dominant player in its home canton of Zurich, which stands out relative to other Swiss cantons in terms of its economic size. The mortgage market share of other cantonal banks also typically exceeds that of UBS in their respective home cantons. By contrast, in the segment of domestic loans to medium-sized and large companies, UBS’s market share is higher for all domestic loans. Furthermore, the category of ‘Other banks’ accounts for slightly more than 10% within the segment of loans to large companies.⁹

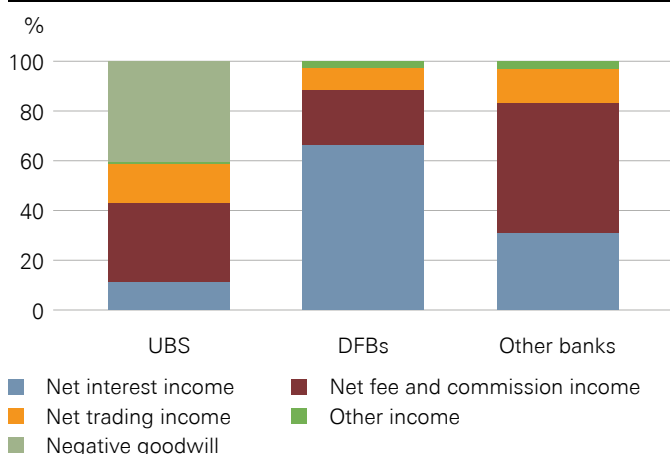
The different business models and geographical exposures are also reflected in the banks’ diverse revenue structures. UBS is a universal bank with a diversified revenue structure. It puts special emphasis on international wealth management but also has significant investment banking and domestic retail operations. Hence, the largest share of UBS’s revenues usually comes from fee and commission income, mainly generated by its wealth management division. However, UBS’s 2023 revenue structure differs since it reflects negative goodwill as an exceptional or one-off accounting gain in the wake of the Credit Suisse acquisition (cf. chart 3.4). By contrast, net interest income is the prevailing source of revenue for DFBs. They concentrate on the domestic deposit and lending business, with a special focus on mortgages. In the category of ‘Other banks’, net fee and commissions make up more than 50% of their total income due to these banks’ focus on wealth management.

9 The group of large companies refers to firms with more than 250 employees.

REVENUE STRUCTURE

As a percentage of total revenue, 2023

Chart 3.4



Source(s): SNB

NBFIs also play major role in Swiss financial sector – interlinkages with banks can serve as shock transmitters

Besides banks, non-bank financial institutions (NBFIs) play a prominent role in the Swiss financial sector. NBFIs capture a wide range of financial service providers including, for instance, pension funds, insurance companies, investment funds and other financial institutions. When considered collectively, their financial asset holdings account for about 500% of Swiss GDP and thus exceed those of banks as at end-2022 (cf. chart 3.5). At an individual level, some of these NBFIs are sizeable too: The largest insurance company in Switzerland has a balance sheet of more than CHF 300 billion, exceeding the size of any DF-SIB.

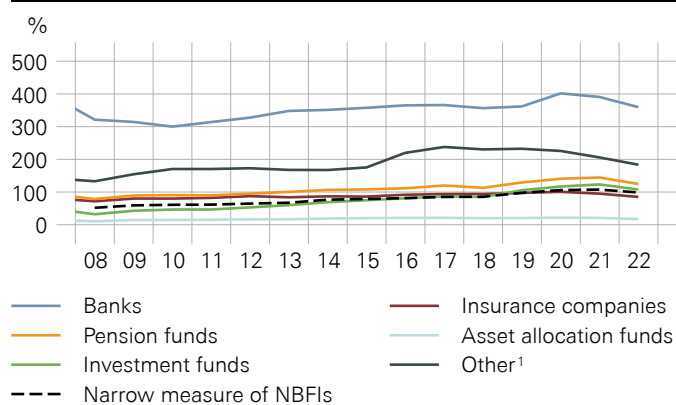
A relatively small subset of these NBFIs provides bank-like services such as credit intermediation based on leverage and maturity transformation which could pose risks for financial stability. As defined by the FSB, NBFIs in this ‘narrow measure’ capture mainly investment funds but also consumer credit providers, corporate leasing firms and securities firms.¹⁰ As a group, their financial asset holdings have essentially doubled since the 2008 financial crisis, recently reaching 100% of Swiss GDP (cf. chart 3.5). When compared with banks, the NBFIs belonging to this narrow measure tend to be small. In terms of financial asset holdings, the average investment fund, for instance, amounts to about CHF 680 million, or less than 0.1% of Swiss GDP. Similarly, on average, the assets of securities firms amount to about CHF 341 million or 0.04% of Swiss GDP. By comparison, the average bank in Switzerland is about 25 times bigger than the average investment fund, with a balance sheet total of about CHF 17 billion. The contrast between the respective largest institutions is even starker. While the balance sheet of the largest Swiss

10 In its Global Monitoring Report, the FSB uses five economic functions to classify NBFIs within the ‘narrow measure’ (cf. www.fsb.org/work-of-the-fsb/financial-innovation-and-structural-change/non-bank-financial-intermediation/).

STOCKS OF FINANCIAL ASSETS RELATIVE TO GDP

As at year-end

Chart 3.5



1 ‘Other’ captures money market funds, real estate investment trusts and real estate funds, central mortgage bond institutions, etc.

Source(s): SNB

investment fund stands at CHF 32 billion and that of the largest securities firm at CHF 9 billion, that of UBS as the largest Swiss bank is more than 44 and 156 times higher, respectively.

Some key features that distinguish NBFIs from banks also limit the risks they pose to financial stability. First, the business models of NBFIs typically involve either less leverage (investment funds) or no material leverage (pension funds). Moreover, NBFIs cannot create money in the process of lending. Instead, they have to acquire the funds that they invest. Second, as their businesses typically have longer redemption periods, NBFIs tend to be less exposed to liquidity risks. The extent of liquidity risk that NBFIs are exposed to varies depending on their business model. For instance, life insurers are comparatively more exposed to liquidity risks than non-life insurers as life insurance policyholders have the possibility to withdraw their savings at relatively short notice (surrender risk). NBFIs active in secured lending markets or structured finance products can also be subject to liquidity risks even in the absence of significant leverage or maturity transformation. For securities firms, such liquidity risks can materialise in the form of higher margin requirements from counterparties in times of market volatility.

As a consequence of these features, NBFIs are subject to different institutional arrangements. For instance, they are not covered by deposit insurance schemes and are subject to different regulatory standards.¹¹ In Switzerland, FINMA is the supervisory authority for insurers, investment funds and securities firms. Pension funds, in turn, are supervised by the Occupational Pension Supervisory Commission.¹²

Although NBFIs pose fewer risks to financial stability on a standalone basis, their interlinkages with the banking sector are relevant as they give rise to potential shock transmission mechanisms and contagion effects. Banks and NBFIs are directly connected, not only within Switzerland but also across borders, as funding channels operate in both directions. Banks often lend to or invest in NBFIs, while these entities provide funding to banks, use their payment systems, or deposit the non-invested part of customer assets with custodian banks. Banks and NBFIs can also be connected through guarantees and exposures to similar asset classes. The SNB is contributing to analytical work at the international level on the interconnections between banks and NBFIs. The goal is to improve transparency on mutual exposures and understand their financial stability implications, especially with regard to business, concentration and funding risks.

11 Liquidity regulation varies depending on the type of NBFIs. In the case of securities firms, for example, there are two different categories and each of them is regulated in a different way. Account-holding securities firms must comply with the provisions of the Liquidity Ordinance applying to banks, while non-account-holding securities firms are exempt from this Ordinance. The latter, however, are nonetheless subject to liquidity requirements, i.e. are required to invest their resources such that sufficient liquidity is guaranteed at all times (art. 71 Financial Institutions Ordinance).

12 See Insurance Supervision Act for insurers, and the Collective Investment Schemes Act for investment funds. The Financial Institutions Act, in turn, lays down the requirements for financial institutions' activities (portfolio managers, trustees, managers of collective assets, fund management companies and securities firms). The basis for the supervisory function of the Occupational Pension Supervisory Commission is regulated in the Federal Act on Occupational Old Age, Survivors' and Invalidity Pension Provision.

Stability of the Swiss banking sector

The SNB's assessment of the stability of the Swiss banking sector is based on the elements addressed in the following subchapters. Subchapter 4.1 discusses banks' resilience to adverse events based on the profitability of their business and the size and quality of their regulatory capital. Subchapter 4.2 focuses on the key risk factors to which banks are exposed and which could lead to losses in the event of adverse developments. Subchapter 4.3 presents the SNB's scenario analysis, which assesses banks' resilience in relation to the losses incurred under various adverse scenarios. Scenario analysis constitutes a forward-looking economic assessment of the capital adequacy of banks based on their risk exposures (discussed in subchapter 4.2) and ability to absorb losses (discussed in subchapter 4.1). As such, scenario analysis complements the regulatory capital figures. Subchapter 4.4 focuses on market-based indicators. These indicators reflect market participants' assessments of banks' creditworthiness, resilience and expected future profitability, and provide a useful complement to regulatory metrics and scenario analysis. Finally, subchapter 4.5 discusses the recovery and resolution of systemically important banks. Recovery and resolution planning is intended to stabilise or resolve these banks in severe distress.

4.1 RESILIENCE

The assessment of the banking sector's resilience comprises two elements: profitability and capitalisation. Sustainable profits constitute the first line of defence for absorbing losses in a stress event, and they help to restore capital – the second line of defence – following such an event.

4.1.1 PROFITABILITY

Domestically focused banks (DFBs), UBS and the category of 'Other banks' have different revenue structures. The main source of income for the DFBs is net interest income from the deposit and lending business. By contrast, UBS and the 'Other banks' derive a large part of their income from wealth management and investment banking. This results in a high proportion of non-interest income, in particular net fee and commission income (cf. chart 4.1 and chapter 3). For UBS, this proportion is also large in comparison with its international peers.¹

Banking sector profitability continued to improve in 2023

The banking sector's profitability, as measured by return on assets, continued to improve in 2023 across all bank categories, reaching 1.07% (up from 0.56% in 2022, cf. chart 4.1).^{2,3} For the DFBs, return on assets increased as these banks continued to benefit from rising interest rates. For UBS, return on assets increased on the back of its one-off accounting gain resulting from the acquisition of

1 For the international comparison of profitability, the sample is limited to other global systemically important banks (G-SIBs) with a business model that resembles that of UBS. Specifically, the sample includes the following banks: JP Morgan Chase, Bank of America, Citigroup, Morgan Stanley, Goldman Sachs, Barclays, HSBC, Deutsche Bank, Société Générale and BNP Paribas.

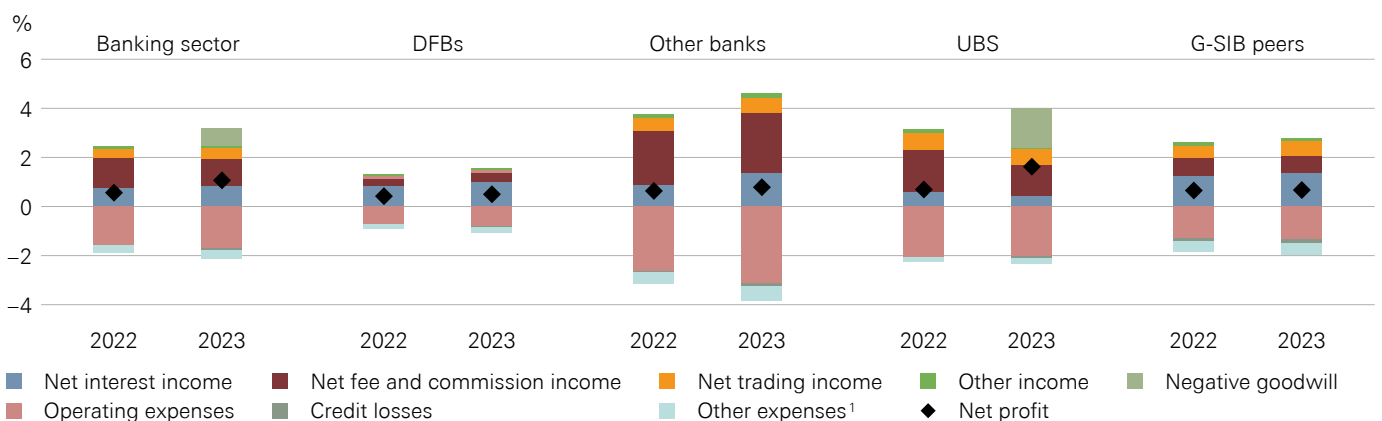
2 From a financial stability perspective, profitability measures that relate profits to the size of banks' risk exposures, such as return on assets, are particularly relevant. Investors tend to prioritise return on equity when assessing the potential return on their investment. This metric is less suited to evaluating the underlying resilience of a bank, particularly as it can improve alongside weakened capital, compromising the latter's role as the second line of defence. Return on assets is defined as net profit as a percentage of total assets.

3 The picture is similar when adjustments are made for the differing methods of calculating balance sheet size under the various accounting standards.

RETURN ON ASSETS

Reported net profit as a percentage of assets

Chart 4.1



1 Including value adjustments, provisions, depreciation, amortisation and impairment of non-financial assets.

Source(s): Bank disclosures, Bloomberg, FINMA, Moody's, SNB

Credit Suisse.⁴ For the ‘Other banks’, return on assets increased, driven predominantly by the interest income business. At the same time, credit losses within this category of banks rose substantially, mainly due to insolvencies related to the Austrian Signa Group. The overall impact of this insolvency event was immaterial for the Swiss banking sector as a whole, however.

DFBs’ profitability increased to levels last seen over a decade ago

Against the backdrop of rising interest rates, DFBs’ profitability continued to improve in 2023, reaching 0.50% (compared to 0.42% in 2022, cf. chart 4.2). The improvement in return on assets was mainly driven by the increase in net interest income, which more than offset higher operating costs. Having improved over the past two years, this metric is now close to its long-run historical average.

In 2023, profitability also improved for two of the three domestically focused systemically important banks (DF-SIBs). Return on assets increased year-on-year at Raiffeisen Group from 0.42% to 0.47%, and at Zürcher Kantonalbank (ZKB) from 0.53% to 0.62%. In both cases, the increase was due to higher net interest income. By contrast, return on assets at PostFinance remained almost unchanged at comparatively low levels (0.16% in 2023 vs. 0.17% in 2022). While its income streams benefited from the return to positive interest rates, the negative contribution from operating expenses offset this effect.

Significant increase in net interest margins drives DFBs’ profitability

Overall, DFBs’ net interest margins on outstanding positions improved significantly in 2023, rising by 20 basis points to 1.10% (cf. chart 4.2).⁵ The improvement in net interest margins was driven by the increase in interest income from assets being renewed at the prevailing higher interest rates. Meanwhile, interest expenses rose by a lesser degree, as would be expected in a process in which banks are able to restore their liability margins (cf. special topic in subchapter 5.4). Net interest margins have improved significantly over the past two years (by around 23 basis points). This increase offsets around 30% of the decrease that occurred between 2009 and 2021.

On the assets side, interest rates on new mortgages and on banks’ sight deposits held at the SNB continued to increase in 2023. The average interest rate on the stock of outstanding mortgage loans rose from 1.33% (end-2022) to 1.72% (end-2023), while the average interest rate on all interest-bearing positions increased from 1.05% (end-2022) to 1.88% (end-2023).

⁴ Specifically, this accounting gain was negative goodwill, which arises when the purchase price for a company is lower than the difference between the value of the assets acquired and the liabilities assumed.

⁵ Net interest margins are approximated as net interest income divided by interest-bearing assets. Interest-bearing assets are approximated as the sum of mortgage claims, claims against customers, financial claims, and banks’ sight deposits held at the SNB.

On the liabilities side, the average interest rate on deposits also continued to increase. The volume-weighted average interest rate across all deposits rose to 0.63% at the end of 2023 (from 0.22% at end-2022). This is due to two developments. First, the interest rates on most deposit categories increased. Going forward, this indicates that the zero lower bound on retail deposit interest rates, which had muted the pass-through of market rates to deposit rates during the phase of ultra-low and negative interest rates, is no longer relevant. This has direct repercussions on these banks’ exposure to interest rate risk (cf. special topic in subchapter 5.4). Second, depositors migrated from sight deposits with lower interest rates to term deposits with higher interest rates.

UBS financial results in 2023 were dominated by acquisition-related effects

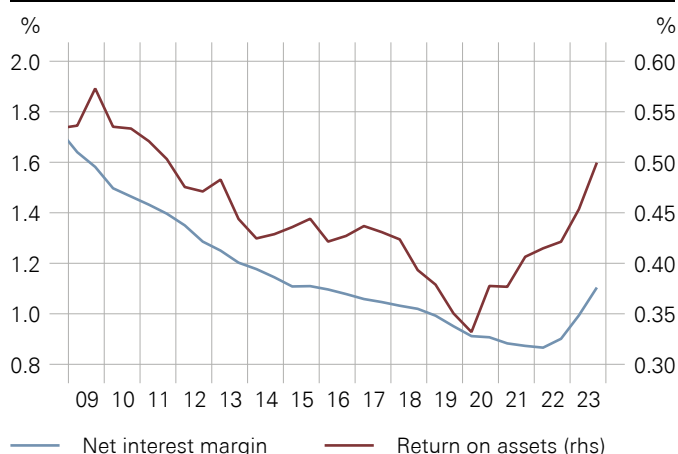
With the acquisition of Credit Suisse, UBS has entered a multi-year transition period. In particular, the acquisition and integration of Credit Suisse affected its financial results for the full year 2023. On the one hand, UBS reported an exceptional profit due to a one-off accounting effect from the acquisition, on the other hand, its profitability excluding this one-off accounting effect was reduced by the integration of Credit Suisse.

For the full year 2023, UBS reported a net profit of about CHF 25 billion, compared to about CHF 7 billion in 2022.⁶ This reflects the negative goodwill of about CHF 25 billion resulting from the acquisition of Credit Suisse. Negative goodwill is an accounting gain which arises when the purchase price for a company is lower than the

⁶ UBS publishes its financial results in US dollars. These indicative conversions to Swiss francs are based on quarterly average FX rates.

BANK PROFITABILITY

DFBs Chart 4.2



Source(s): SNB

difference between the value of the assets acquired and the liabilities assumed.⁷

Excluding this one-off accounting effect, UBS's profit in 2023 was reduced by the integration of Credit Suisse. The bank recorded significant losses in its non-core and legacy division, where most of the former Credit Suisse's investment banking business is being wound down. The integration of Credit Suisse also impacted the profitability of the combined wealth management and investment banking divisions. By contrast, the combined Swiss division improved its profitability.

⁷ In the case of UBS's acquisition of Credit Suisse, the sum of purchase price and negative goodwill was smaller than the book value of equity at Credit Suisse in Q4 2022, mainly because UBS had to book valuation adjustments ('purchase price allocation adjustments'), which significantly reduced the net value of the assets acquired. These valuation adjustments were partially offset by a decrease of Credit Suisse's liabilities due to the write-off of AT1 instruments.

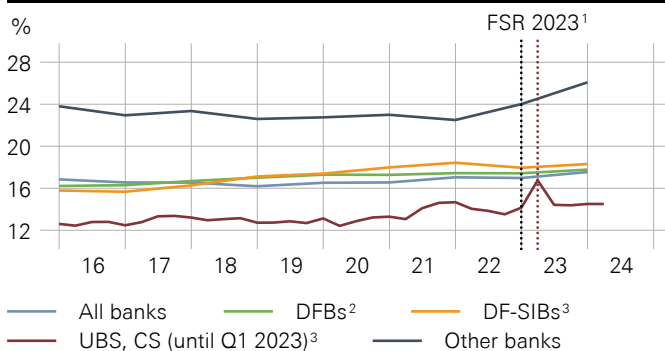
In the first quarter of 2024, UBS reported a net profit of about CHF 1.6 billion. Profitability improved across all business divisions. Once the integration of Credit Suisse is completed, the bank expects its profitability, expressed as return on Common Equity Tier 1 (CET1), to return to pre-acquisition levels.

4.1.2 CAPITALISATION

Banks' capital, as the second line of defence after profitability, defines their capacity to absorb losses. The focus is on CET1, as this represents the more reliable source of loss-absorbing capacity in a going concern. Additional Tier 1 (AT1) instruments also count as going-concern capital. However, their ability to absorb losses in a timely manner and thus contribute to a bank's recovery was questioned in the case of the crisis at Credit Suisse (cf. subchapter 4.1.3). The capital of DFBs and of the 'Other banks' consists to a very large extent of CET1 capital (95% and 91%, respectively). In the case of UBS,

CET1 CAPITAL RATIO

At year-end (for UBS and CS at end-quarter) Chart 4.3

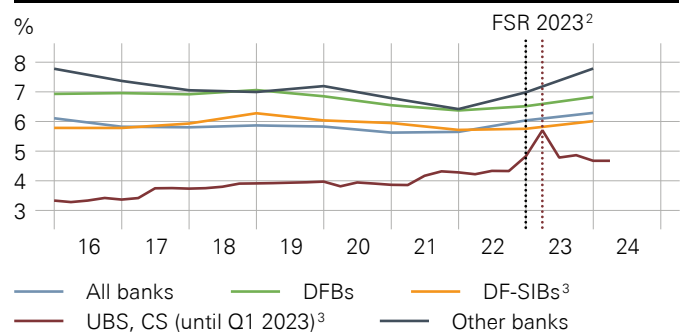


- FSR 2023 used end-2022 data for all banks, and Q1 2023 data for UBS and CS.
- From 2020, excluding members of small banks regime.
- A phase-in perspective is used for DF-SIBs, and a look-through perspective for UBS and CS.

Source(s): FINMA, SNB

CET1 LEVERAGE RATIO¹

At year-end (for UBS and CS at end-quarter) Chart 4.4

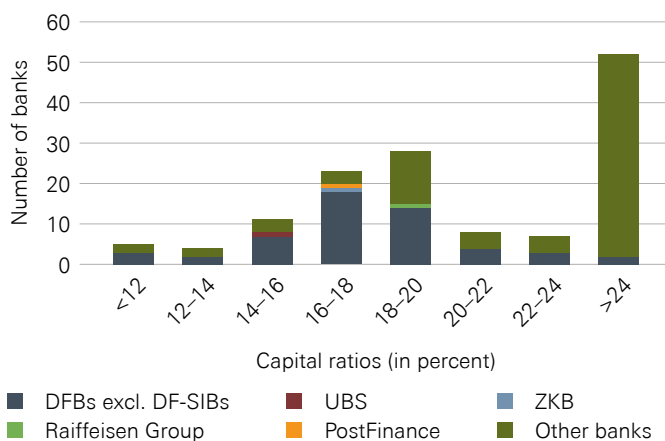


- Total assets are used in the denominator before the implementation of the leverage ratio exposure measure.
- FSR 2023 used end-2022 data for all banks, and Q1 2023 data for UBS and CS.
- A phase-in perspective is used for DF-SIBs, and a look-through perspective for UBS and CS.

Source(s): FINMA, SNB

DISTRIBUTION OF CAPITAL RATIOS BY BANK

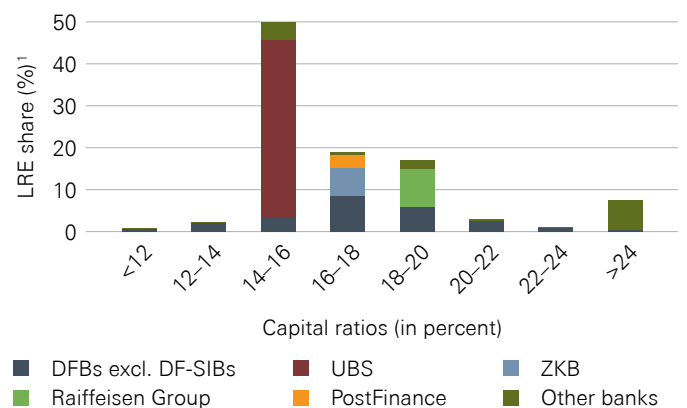
Risk-weighted CET1 capital ratios, as at end-2023 Chart 4.5



Source(s): FINMA, SNB

DISTRIBUTION OF CAPITAL RATIOS BY BANK SIZE

Risk-weighted CET1 capital ratios, as at end-2023 Chart 4.6



- Share in all banks' total Basel III leverage ratio exposure.

Source(s): FINMA, SNB

the share of AT1 instruments in going-concern capital is comparatively larger, at 16%.⁸

Swiss banks' capitalisation increased slightly and is heterogeneous across banks

In 2023, the Swiss banks' capital situation improved slightly (cf. charts 4.3 and 4.4),⁹ leading to a build-up of capital buffers in the banking system. The CET1 risk-weighted capital ratio of the total banking system increased from 17.0% at end-2022 to 17.5% at end-2023.¹⁰ At the individual bank level, capital ratios vary significantly – a few banks have ratios of less than 12%, and more than 50 have ratios of over 24% (cf. charts 4.5 and 4.6). Capital ratios tend to be particularly high at smaller banks: The capital ratio of the median bank amounts to 19.8%, while it amounts to 18.7% when the smallest 50% of the banks are excluded from the sample.

Capital buffers are essential for loss-absorbing and lending capacity

Required capital consists of both minimum required capital and regulatory buffers.¹¹ These buffer requirements include the countercyclical capital buffer (CCyB), the capital buffer target levels set according to supervisory category (cf. Capital Adequacy Ordinance), as well as the institution-specific capital buffer requirements applying to systemically important banks.

The CCyB is currently applied on a sectoral basis, more specifically to domestic residential mortgages. This buffer accounts for the vulnerabilities observed on the Swiss mortgage and real estate markets (cf. subchapter 2.2). The CCyB imposes an additional CET1 requirement equal to 2.5% of risk-weighted exposures secured by residential property in Switzerland, which corresponds to around 0.8% of the volume of domestic mortgages secured with residential real estate. The CCyB would be released and could be used at the banks' discretion to absorb losses and sustain lending in the event of a materialisation of risks on the mortgage and real estate markets. By contrast, the other two regulatory buffers, the capital buffer according to supervisory category and the institution-specific buffer, are permanent in nature. They can also be used to absorb losses but have to be restored within deadlines set by the Swiss Financial Market Supervisory Authority (FINMA) in the event of a temporary shortfall.

8 UBS's share of AT1 instruments in going-concern capital is currently rather low due to the write-off of Credit Suisse's AT1 instruments as instructed by FINMA in March 2023. As the current TBTF regulations allow systemically important banks to meet up to 30% of their going-concern requirements with AT1 instruments, this share is likely to rise again.

9 The aggregate analysis of the capital situation of Swiss banks in this section takes into account the CET1 going-concern capital for the systemically important banks. Furthermore, since January 2020, participants in the 'small banks regime' have been exempted from certain regulatory requirements, such as risk-weighted capital requirements (cf. www.finma.ch/en/supervision/banks-and-securities-firms/kat-4-und-5-kleinbankenregime/). In this section, these banks are included in aggregate leverage ratio figures but are excluded from risk-weighted ratios.

10 20.2% and 20.7% for the total eligible capital ratios at end-2022 and end-2023, respectively.

11 Cf. art. 41 Capital Adequacy Ordinance. In addition, some banks have Pillar 2 capital surcharges for specific risks.

In addition to regulatory buffers, almost all banks held at least 20% of their CET1 capital as additional voluntary buffers (cf. chart 4.7). At the end of 2023, banks' voluntary buffers increased by 4% year-on-year. Taken together, the regulatory and voluntary buffers amount to about 3% of the banking sector's total assets, or about 7% of the banks' total credit volume.

DFBs increase loss-absorbing capacity through retained earnings

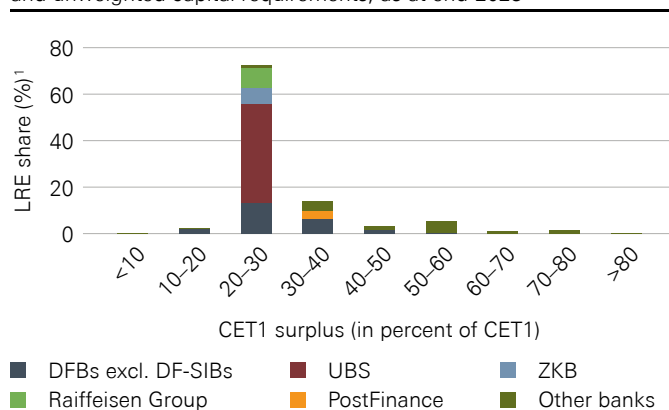
For DFBs, loss-absorbing capacity increased in 2023 because they retained a significant portion of their earnings. Both the CET1 capital ratio as well as the CET1 leverage ratio rose slightly in 2023 compared to 2022.¹² Their risk-weighted CET1 ratio has grown steadily over the past decade, while their CET1 leverage ratio has remained roughly stable over the same period (cf. charts 4.3 and 4.4). This positive trend has contributed to strengthen the resilience of these banks, reducing risks in the banking system.

These figures indicate that, on average, DFBs currently hold significant capital buffers. This also applies to most of these banks taken individually. For instance, most DFBs' leverage ratios exceed 6%, more than double the minimum requirement. However, the heterogeneity across banks is large. Some of these banks' capital ratios are only slightly above regulatory minima and/or regulatory buffer requirements, limiting their loss-absorbing capacity (cf. also subchapter 4.3.2).

12 Domestically focused banks' risk-weighted capital ratios: total eligible capital ratio (2022: 18.4%; 2023: 18.8%) and CET1 ratio (2022: 17.4%; 2023: 17.8%). The CET1 leverage ratio increased from 6.5% to 6.8% (and the Tier 1 leverage ratio from 6.7% to 7.0%).

CET1 SURPLUS

Surplus with respect to the maximum of risk-weighted and unweighted capital requirements, as at end-2023 Chart 4.7



1 Share in all banks' total Basel III leverage ratio exposure.

Source(s): FINMA, SNB

DF-SIBs' GOING-CONCERN CAPITAL RATIOS AND REQUIREMENTS

Look-through and phase-in

Table 1

	PostFinance			Raiffeisen Group			ZKB		
	2022	2023	Requirement 2023 ³	2022	2023	Requirement 2023 ³	2022	2023	Requirement 2023 ³
TBTF ratios (look-through)¹									
TBTF going-concern capital ratio	17.3%	15.8%	13.1%	18.8%	19.5%	14.6%	17.1%	18.7%	13.8%
TBTF CET1 capital ratio	16.4%	14.3%	8.9%	18.8%	19.5%	10.4%	16.8%	17.4%	9.5%
TBTF going-concern leverage ratio	4.5%	4.6%	4.5%	6.2%	6.3%	4.6%	5.8%	6.6%	4.5%
TBTF CET1 leverage ratio	4.3%	4.1%	3.0%	6.2%	6.3%	3.1%	5.7%	6.1%	3.0%
TBTF ratios (phase-in)²									
TBTF going-concern capital ratio	19.1%	18.5%	13.1%	18.8%	19.5%	14.6%	18.2%	18.7%	13.8%
TBTF CET1 capital ratio	18.3%	17.0%	8.9%	18.8%	19.5%	10.4%	16.8%	17.4%	9.5%
TBTF going-concern leverage ratio	5.0%	5.3%	4.5%	6.2%	6.3%	4.6%	6.2%	6.6%	4.5%
TBTF CET1 leverage ratio	4.8%	4.9%	3.0%	6.2%	6.3%	3.1%	5.7%	6.1%	3.0%
Capital levels (in CHF billions)									
Tier 1 capital TBTF (look-through)	5.2	4.7	–	17.5	18.9	–	13.0	14.8	–
CET1 capital TBTF (look-through)	4.9	4.2	–	17.5	18.9	–	12.8	13.7	–
Tier 1 capital TBTF (phase-in)	5.7	5.4	–	17.5	18.9	–	13.9	14.8	–
CET1 capital TBTF (phase-in)	5.5	5.0	–	17.5	18.9	–	12.8	13.7	–
Exposure levels (in CHF billions)									
TBTF RWA	29.9	29.5	–	92.9	97.1	–	76.1	79.0	–
TBTF leverage ratio exposure	114.6	102.4	–	282.8	299.8	–	223.1	223.9	–

1 The ratios are calculated based on the final requirements, i.e. no transitional provisions are taken into account.

2 The ratios and levels are calculated based on the phase-in requirements as at end-2022 (for 2022 figures) and as at end-2023 (for 2023 figures). Although the going-concern requirements are final, they are not yet final for the gone concern. The gone-concern requirements in the phase-in compared to the look-through perspective can influence the going-concern ratios.

3 Including the Swiss sectoral CCyB. Excluding bank-specific Pillar 2 surcharges for specific risks.

Source(s): DF-SIBs' regulatory reporting

Capital situation at DF-SIBs is heterogeneous

The capital situation and its dynamics vary substantially between the three DF-SIBs. Despite this heterogeneity, the three DF-SIBs were fully compliant with the going-concern risk-weighted capital and leverage ratio requirements (cf. table 1).¹³

For ZKB and Raiffeisen Group, capital ratios and, consequently, their capital buffers improved further in 2023. Both their risk-weighted capital ratios and their leverage ratios are significantly above regulatory requirements. As a consequence, these banks hold substantial voluntary and regulatory capital buffers. For instance, expressed in terms of risk-weighted assets (RWA), their voluntary capital buffers amount to 5%.

As regards PostFinance, its CET1 leverage ratio improved slightly, whereas the CET1 risk-weighted capital ratio declined.¹⁴ While PostFinance's risk-weighted capital ratio exceeds regulatory requirements, at year-end 2023 its leverage ratio was 4.6%, just in line with regulatory requirements (cf. table 1).¹⁵

13 DF-SIBs are subject to the additional going-concern and gone-concern requirements defined in the Swiss TBTF regulations.

14 In a phase-in perspective, the TBTF risk-weighted capital ratio declined at PostFinance due to a less pronounced decrease in RWA than in CET1 (cf. table 1). The decline in CET1, in turn, is due to a reclassification of excess CET1 capital to fulfil gone-concern requirements. As at end-2023, the gone-concern requirements as disclosed by PostFinance include for the first time the additional requirements related to emergency planning.

15 In a look-through perspective, PostFinance will have to allocate more CET1 capital to meet the increased gone-concern requirements. This allocation results in lower CET1 capital ratios compared to the phase-in values indicated in table 1 (cf. subchapter 4.5).

UBS already meets its estimate of higher TBTF requirements for combined bank

UBS's capital situation – based on CET1 capital – has improved since Q1 2023 from both a risk-weighted and a leverage ratio perspective (cf. table 2).¹⁶ As of the end of Q1 2024, UBS meets the currently applicable capital requirements as well as its estimate of the future requirements for the combined bank under the 'too big to fail' (TBTF) regulations. The Swiss TBTF capital requirements are progressive and depend on a systemically important bank's market share and size. Accordingly, UBS's capital requirements will increase to take account of the larger market share and size of the combined bank. UBS has been granted a transition period by FINMA, with phase-in starting from 2026 and ending in 2030 at the latest, to comply with these higher requirements. Based on market share and size as at end-2023, UBS estimates the future requirements for the risk-weighted CET1 capital ratio at 12.3% (compared with 10.5% at present), implying an estimated future CET1 leverage ratio requirement of 4.1% (compared with 3.5% at present).¹⁷

In an international comparison, UBS's Basel III risk-weighted CET1 ratio is above the average for global systemically important banks (G-SIBs) (cf. chart 4.8),

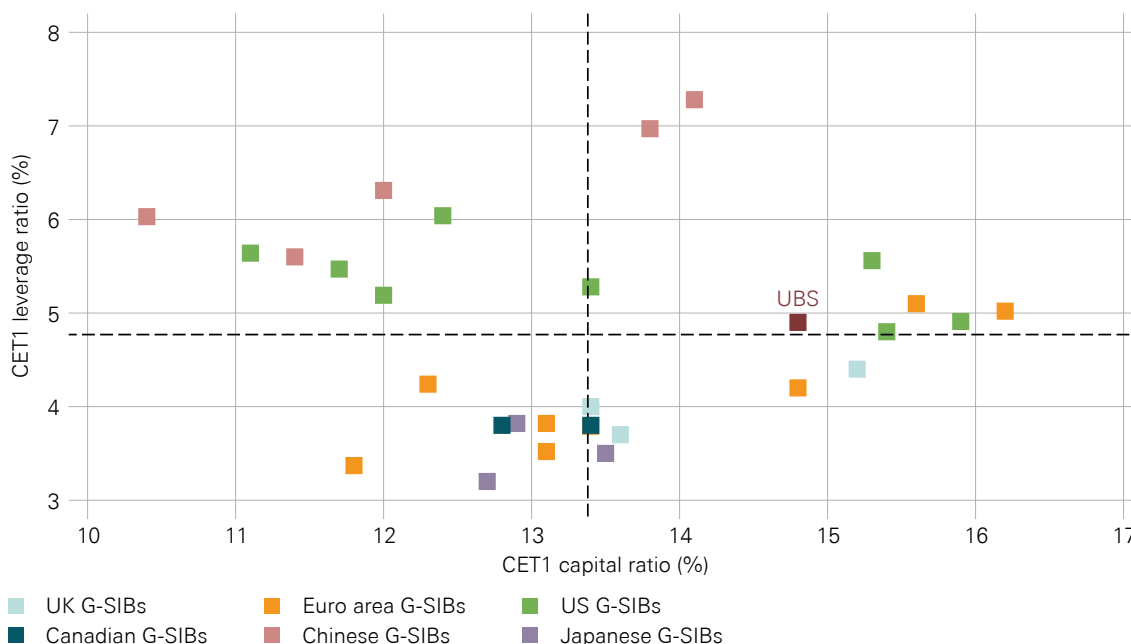
16 With a risk-weighted CET1 capital ratio of 14.8%, the bank remains above its own target of 14%.

17 Cf. UBS, Q4 2023 Fixed income investor presentation, 6 February 2024. In its estimates, UBS assumes market share and leverage ratio exposure as at end-2023, and also takes into account a static CCyB and the FINMA Pillar 2 surcharge of USD 800 million in connection with the default of Greensill Capital. The requirements stated here, however, do not include the surcharge. The CET1 leverage ratio requirement was derived from UBS's estimate for the risk-weighted CET1 capital requirement.

INTERNATIONAL COMPARISON OF CET1 CAPITAL¹

G-SIBs, Q1 2024

Chart 4.8



1 The dashed lines depict the (unweighted) averages.

Source(s): Bank disclosures, Bloomberg

UBS'S GOING-CONCERN CAPITAL RATIOS AND REQUIREMENTS

Table 2

	Q1 2023	Q1 2024	Requirement as of 1.1.2024 ¹	Estimated TBTF requirement as of 1.1.2030 ²
TBTF CET1 ratios				
TBTF CET1 capital ratio	13.9%	14.8%	10.5%	12.3%
TBTF CET1 leverage ratio	4.4%	4.9%	3.5%	4.1%
TBTF going-concern ratios³				
TBTF going-concern capital ratio	17.9%	17.8%	14.8%	16.6%
TBTF going-concern leverage ratio	5.7%	5.8%	5.0%	5.6%
Basel III ratios⁴				
Basel III CET1 capital ratio	13.9%	14.8%	8.5%	–
Basel III Tier 1 capital ratio	17.9%	17.8%	10.0%	–
Basel III Tier 1 leverage ratio	5.7%	5.8%	3.8%	–
Capital levels (in CHF billions)				
TBTF CET1 capital	40.8	70.5	–	–
TBTF going-concern capital	52.8	84.3	–	–
Exposure levels (in CHF billions)				
TBTF RWA	294	475	–	–
TBTF leverage ratio exposure	929	1 443	–	–

1 Including the Swiss sectoral CCyB. Excluding bank-specific Pillar 2 surcharges for specific risks.

2 UBS estimation for the risk-weighted requirements (cf. Q4 2023 Fixed income investor presentation, 6 February 2024) and SNB calculation. Estimated requirements assume TBTF surcharges based on leverage ratio exposure and market share as of end-2023 and include the CCyB requirement. FINMA Pillar 2 capital surcharges are not taken into account.

3 Going-concern capital consists of CET1 capital and high-trigger AT1 capital instruments. The ratios are calculated taking into account the grandfathering clause applicable from January 2020: Low-trigger AT1 capital instruments with a first call date after 1 January 2020 are counted as going-concern capital. As of Q1 2024, the going-concern ratios would be 17.5% (risk-weighted) and 5.8% (leverage ratio) if the grandfathering clause is not taken into account.

4 The requirement for the Basel III CET1 capital ratio comprises the minimum of 4.5%, the capital conservation buffer of 2.5% and the surcharge for G-SIBs of 1.5%. The requirement for the Basel III Tier 1 capital ratio comprises, in addition, a minimum of 1.5% to be met with capital of at least AT1 capital quality. The leverage ratio requirement comprises the minimum of 3% and the surcharge for G-SIBs of 0.75%.

Source(s): Bank disclosures, SNB calculations

while its CET1 leverage ratio is in line with the international average.

Current regulatory treatment of UBS parent bank’s participations is not sufficiently robust

The parent bank of UBS refers to UBS AG¹⁸ as a standalone operating bank. It is a wholly owned subsidiary of UBS Group AG, and itself holds participations in domestic and foreign subsidiaries that also operate as banks, including the two Swiss entities UBS Switzerland AG and Credit Suisse (Schweiz) AG that are to be legally merged in Q3 2024 (cf. chart 4.9). In addition to its function as a holding company, the parent bank engages in operational activities and conducts liquidity management for the entire group. Within UBS Group AG, the parent bank is the largest legal entity. Moreover, it is the central operating entity and an important legal counterparty on the financial markets.

Adequate standalone capital requirements are essential for depositors’ and counterparties’ trust in the parent bank. The parent bank and its subsidiaries are regulated legal entities and therefore subject to their own capital requirements in a consolidated or a standalone perspective. For the parent bank, the main focus is on the standalone perspective: In the event of default, depositors and counterparties of the parent bank have a direct claim only on the assets directly booked in the parent bank. By contrast, their claim on the assets of the subsidiaries is subordinated to all other liabilities of the subsidiaries.

As of the end of Q1 2024, figures for the Credit Suisse and UBS parent banks¹⁹ indicate that UBS is well on track to

meet its estimate of the future CET1 capital requirements under the current TBTF framework at parent bank level, which will increase from 10% to an estimated 11.8%²⁰ due to the larger market share and size of the combined bank.²¹ Yet, even with these higher future capital requirements and on a fully applied perspective with the final risk weights for participations, the current TBTF framework requires only a partial capital backing of the parent bank’s participations in its subsidiaries.²² As a participation is the most junior claim on the assets of a wholly owned subsidiary, the parent bank bears the entire risk of these assets. With a partial capital backing of the participation, the parent bank can back this risk with less capital than if it had the subsidiary’s assets on its own balance sheet. This leads to capital ratios that are vulnerable to impairments of these participations (cf. special topic in subchapter 5.3).

These weaknesses in the current capital regime materialised during the crisis at Credit Suisse. The value of the parent bank’s participations in its UK and US subsidiaries massively depreciated due to lower estimated profits in

20 Cf. UBS, Q4 2023 Fixed income investor presentation, 6 February 2024. The requirements exclude CCyB requirements for the parent bank and bank-specific Pillar 2 capital surcharges.

21 As of Q1 2024, the UBS parent bank’s risk-weighted CET1 capital ratio amounts to 14.6% and the Credit Suisse parent bank’s risk-weighted CET1 capital ratio to 17.5% at the standalone level. These capital ratios are based on the current phase-in risk weights for the parent banks’ participations in Swiss and foreign subsidiaries. These risk weights will gradually increase to 250% for Swiss participations and 400% for foreign participations by the beginning of 2028. Based on a fully applied perspective with final risk weights, the UBS parent bank’s CET1 capital ratio amounts to 13.2% and the Credit Suisse parent bank’s CET1 capital ratio to 15.8%. Not taking into account the impact of the ‘regulatory filter’ which permits Credit Suisse to measure the regulatory capital position as if Credit Suisse AG standalone had maintained the portfolio valuation method, in contrast to the accounting treatment, the Credit Suisse parent bank’s fully applied CET1 ratio would decrease to 14.1%.

22 A participation in a financial subsidiary relates to the capital that the parent bank has granted to this subsidiary. If the parent bank is not required to fully back such a participation with regulatory capital, it can partially finance capital at a subsidiary through debt. This practice is referred to as ‘double leverage’.

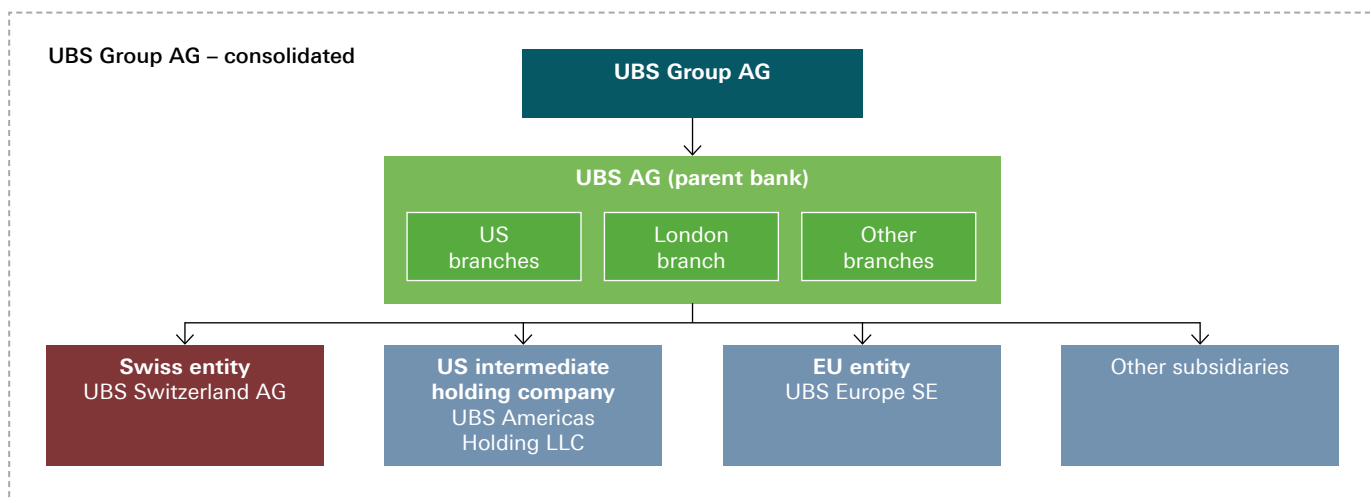
18 UBS AG is the result of the merger of the previous parent banks of UBS (UBS AG) and Credit Suisse (Credit Suisse AG) on 31 May 2024.

19 Figures on the combined UBS parent bank are not yet available.

SIMPLIFIED FUTURE LEGAL STRUCTURE OF UBS (POST-MERGER, PLANNED)

UBS AG operates as a holding company and as a bank

Chart 4.9



Source(s): SNB

these subsidiaries, leading to a substantial deterioration of its capitalisation.

The current capitalisation of the combined UBS parent bank is stronger than that of the Credit Suisse parent bank before the crisis. Still the weaknesses of the current regime remain and should be addressed. For this reason, the Federal Council has proposed strengthening the capital regulation of the parent bank (cf. subchapter 4.1.3 and special topic in subchapter 5.3).

4.1.3 LESSONS LEARNT FROM THE CRISIS AT CREDIT SUISSE – CAPITAL REGULATION

The SNB concurs with the Federal Council that capital regulation needs to be strengthened further in light of the crisis at Credit Suisse.

According to article 9 of the Banking Act, systemically important banks are subject to special capital requirements (TBTF capital regulations). In particular, they must hold capital that ensures a higher loss-absorbing capacity than is the case for other banks.

While the quantitative capital requirements are indeed higher for systemically important banks, the crisis at Credit Suisse has revealed weaknesses in the architecture of capital regulation.²³ These weaknesses call into question the effectiveness of the capital requirements in ensuring adequate loss-absorbing capacity:²⁴

- Under the current regulations, a systemically important bank can use AT1 instruments instead of CET1 capital to meet up to roughly 30% of the going-concern capital requirement. However, AT1 instruments were not able to

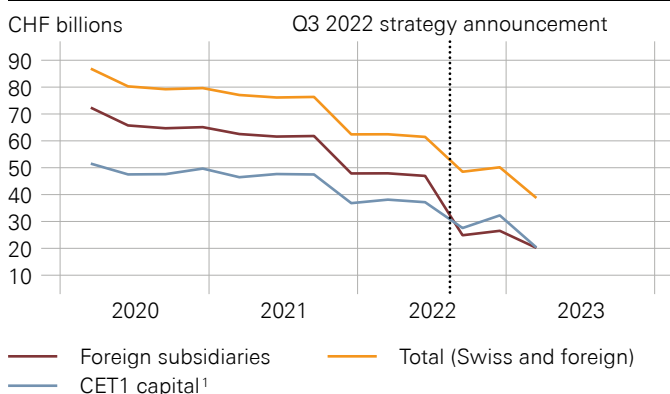
23 The current Swiss TBTF regulations are in line with the standards of the BCBS. Compliance with these international minimum standards is necessary but not sufficient to ensure adequate resilience at banks.

24 Cf. also Federal Council report on banking stability, April 2024, and SNB Financial Stability Report 2023.

DEVALUATION OF PARTICIPATIONS AT CREDIT SUISSE PARENT BANK DURING CRISIS

Q1 2020 to Q1 2023

Chart 4.10



1 Excluding the effects of the AT1 write-down in Q1 2023.

Source(s): SNB

absorb losses in a timely manner at Credit Suisse. In particular, the bank continued to pay coupons on these instruments despite incurring sustained losses.²⁵

- The credibility of CET1 capital as a measure of financial strength relies on a prudent valuation of assets. During the crisis at Credit Suisse, however, assets such as software and deferred tax assets dropped sharply in value when strategy adjustments and radical restructuring measures became necessary, thereby negatively impacting the bank’s capital situation at a time when the bank was most vulnerable. Doubts regarding the prudent valuation of assets also led to substantial valuation adjustments, which UBS implemented in Q2 2023 following the acquisition (cf. also comments on prudent valuation in subchapter 4.2.6).
- Under the current regulations, a parent bank’s participations are only partially backed by capital. As a result, standalone capital ratios of the parent bank overestimate its true resilience and are vulnerable to impairments of participations in its subsidiaries. This risk materialised in the case of Credit Suisse as the value of its foreign participations fell by roughly 60% in one year²⁶ (cf. chart 4.10) owing to lower estimated future profits in its UK and US subsidiaries. The root cause of these lower estimated future profits was idiosyncratic stress in an otherwise relatively benign economic and financial market environment. In a recession or in the context of a strong real estate or financial market correction, the value of the participations would depreciate further given the systemic stress. Due to these impairments of its foreign participations, the Credit Suisse parent bank’s capital ratio dropped substantially. The revised capital regulation introduced in 2019²⁷ that is now being phased in is an important step forward as it reduces the parent bank’s vulnerability to impairments of participations. However, even under the fully applied regulations, participations will remain only partially backed by capital (cf. special topic in subchapter 5.3).

Based on these observed weaknesses, measures are necessary to ensure that a bank’s regulatory capital truly reflects its loss-absorbing capacity. The SNB thus supports a consistent implementation of the Federal Council’s proposed measures on capital requirements:

- *Strengthening AT1 instruments:* The loss-absorbing capacity of AT1 instruments in the going concern should be strengthened through, for example, clearer criteria for suspending coupon payments following sustained losses as well as a write-off or conversion into CET1

25 While Credit Suisse continued to pay the full coupons on AT1 instruments, it significantly reduced but never fully stopped dividend payments on its shares.

26 Between Q3 2021 and Q3 2022.

27 A new regime was introduced in 2019 with regard to the regulatory treatment of a parent bank’s participations in its subsidiaries. Under this regime, the risk weights will gradually increase to 250% for Swiss participations and 400% for foreign participations by the beginning of 2028. A fully applied perspective takes into account these final risk weights.

capital at a time when the bank is still able to stabilise its situation before it reaches the point of non-viability. Such measures would bolster the intended purpose of AT1 instruments as going-concern capital.²⁸

- *Strengthening the prudent calculation of CET1 capital:* The calculation of CET1 capital should be adjusted for assets that are likely to lose most of their value in a restructuring. Moreover, regulatory requirements in Switzerland with respect to prudent valuation of complex or illiquid positions should be tightened to adequately reflect the valuation uncertainty for such positions – especially in times of stress (cf. also comments on prudent valuation in subchapter 4.2.6).²⁹
- *Strengthening the capital regime for parent banks:* The capital requirements applicable to parent banks should be redesigned to account for the true economic risk of participations in subsidiaries and to ensure that capital that is passed on to subsidiaries cannot simultaneously be used to cover the parent bank’s own risks. The Federal Council therefore proposes strengthening the capital backing for participations in foreign subsidiaries.³⁰ Under the risk-weighted framework, a higher backing of participations could be achieved either by increasing the risk weights or by deducting participations from the parent bank’s eligible capital. For the leverage ratio, deduction is necessary to restore the ability of this instrument to limit leverage at the parent bank level and to act as an effective backstop to the risk-weighted capital requirement (cf. special topic in subchapter 5.3).³¹

Even with the above-mentioned improvements in the architecture of capital regulation, regulatory ratios remain to a large extent a static measure. In particular, they do not contain forward-looking components, such as a bank’s expected profitability. Moreover, a bank’s risk-weighted assets (RWA) will not necessarily capture all dimensions of a bank’s risk profile.

The crisis at Credit Suisse has shown that forward-looking elements can fundamentally change the assessment of a bank’s resilience, especially in times of stress. The bank’s profitability outlook was weak, and there was high uncertainty regarding the impact of its restructuring plan on costs and revenues, in both the short and medium term. In that context, rating agencies and market participants strongly discounted the fact that the bank’s capital ratio

28 Cf. Federal Council report on banking stability, April 2024.

29 Cf. Federal Council report on banking stability, April 2024.

30 Ibid.

31 This is because the higher risk weights for participations have no effect on the leverage ratio requirement, which uses the same weighting for all assets. Under the current regime, the leverage ratio thus overstates the actual resilience of the parent bank even more than the risk-weighted ratio. Consequently, it cannot act as an effective backstop to the risk-weighted capital requirement.

at the group level was well above the regulatory requirements.³²

Stress tests and market indicators can supplement the current capital regulation, as they provide a more comprehensive and forward-looking assessment of a bank’s resilience. Their results can be used to define institution-specific Pillar 2 capital surcharges or to evaluate the need for recovery measures in times of stress (cf. subchapter 4.5.2). In this regard, the SNB supports a stronger legal basis for institution-specific capital surcharges (i.e. Pillar 2 capital surcharges) based on forward-looking elements.

4.2 RISK

The banking sector is exposed in particular to credit risk, market risk, operational risk, business risk³³ and interest rate risk in the banking book. The first three risk types are covered under Pillar 1 of the Basel framework; hence, specific RWA requirements apply. Using the level of RWA as a metric, chart 4.11 shows that banks’ exposure to each type of risk varies depending on the business model. All banks, and DFBs in particular, are exposed to credit risk. At UBS and the ‘Other banks’, market risk and operational risk are more important than at DFBs.

Business risk and interest rate risk can be covered by additional capital requirements under Pillar 2 of the Basel framework but they are not subject to specific RWA requirements. The materiality and nature of these risks

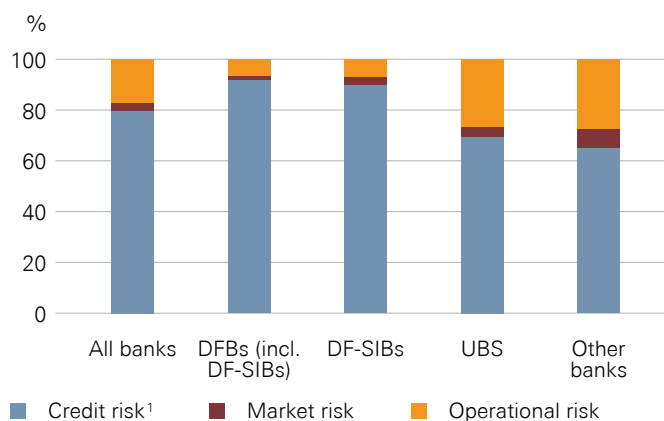
32 For example, in November 2022 – after the announcement of the restructuring plan in October 2022 – Credit Suisse had a long-term rating at group level of BBB– (S&P), A3 (Moody’s) and BBB (Fitch). Moreover, Fitch announced that the Group’s rating would come under pressure if its CET1 ratio fell below 13% during the restructuring phase (cf. Fitch, Rating Action Commentary, 4 August 2022). Further indicators such as CDS premia and price-to-book ratios also reflected the critical assessment of the bank by market participants.

33 Business risk refers to the risk of reduced revenues, in particular due to a drop in business volume or client activity, combined with cost rigidity.

RWA BREAKDOWN

As at Q4 2023

Chart 4.11



1 Credit risk includes non-counterparty-related risks.

Source(s): SNB

depend on the banks' business model and hedging strategies.

Banking sector's RWA decrease driven by de-risking at Credit Suisse and FX effects

In 2023, total RWA in the Swiss banking sector decreased by 6% (cf. chart 4.12). The decrease was driven by exposure reductions at Credit Suisse and the 'Other banks', as well as foreign exchange (FX) effects which lowered the value of exposures denominated in US dollars. For DFBs, RWA increased by 5%.

UBS's RWA are likely to remain well above the pre-acquisition level, even after the planned de-risking of its non-core and legacy division. According to the bank's Q4 2023 disclosure, UBS expects its RWA to be approximately 58% above the Q1 2023 level by year-end 2026 (cf. chart 4.13).

Basel III will have small impact on RWA, for both UBS and Swiss banking sector as a whole

The implementation of the final Basel III standards in Switzerland will take effect at the beginning of 2025. This reform is aimed at improving the international comparability of RWA calculations and limiting the use of internal models to calculate RWA. The reform will also increase the risk sensitivity of the standardised approach.

The impact on RWA will differ depending on the bank category. The Federal Council's impact assessment was based on a static analysis (without balance sheet optimisation) using data as at end-2020. For the sample of internationally active banks, which at the time comprised UBS, Credit Suisse and the 'Other banks', the estimated RWA increase was 27%, compared with an 8% decrease for the sample of DFBs.

For UBS, the impact of the reforms will be considerably smaller than estimated based on this static analysis. In the context of the publication of its Q4 2023 results, UBS

estimated that the day-1 impact of the reforms in 2025 on its core business RWA will amount to approximately USD 15 billion (3% of total RWA), before balance sheet optimisation. This estimate does not include a potential further impact from the non-core and legacy division,³⁴ or from the aggregate output floor which will be fully phased in by 2028.³⁵

4.2.1 CREDIT RISK

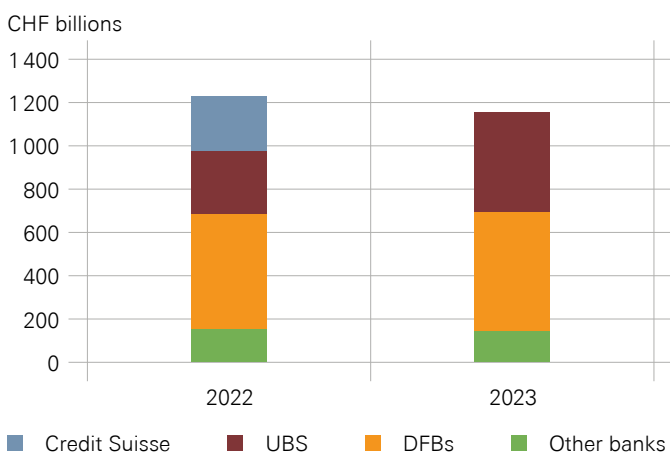
Credit risk is the risk of loss due to a client or counterparty failing to make contractually agreed payments. Banks' credit risk exposure can result from on and off-balance sheet positions.

DFBs' credit risk is driven by developments on real estate market

For DFBs, credit risk results primarily from domestic mortgage loans, which make up around 90% of their credit volume (cf. table 3). In a sectoral breakdown, credit to households makes up around two-thirds of DFBs' total credit, and credit to private non-financial corporations around one-quarter. The latter category includes real estate companies, i.e. firms whose purpose is to build up, manage and operate property portfolios. Around 15% of DFBs' total credit is extended to such companies. Both real estate companies and the collateral securing their loans are vulnerable to a large price correction on the domestic real estate market. For a small number of DFBs, among them PostFinance, credit risk stemming from other assets, such as financial assets, is also relevant.

DEVELOPMENT OF RWA

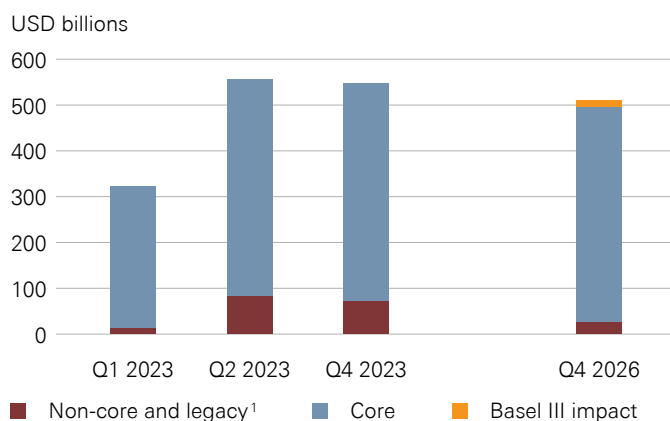
Chart 4.12



Source(s): SNB calculations

UBS – EXPECTED DE-RISKING & BASEL III IMPACT

Chart 4.13



¹ Includes Basel III impact on NCL.

Source(s): UBS's Q4 2023 disclosure

Corporate credit portfolio is UBS's most relevant source of credit risk and has grown significantly due to acquisition of Credit Suisse

For UBS, credit risk also results primarily from secured loans to the private non-bank sector. However, the share of loans that are secured by non-mortgage collateral, such as Lombard loans, and the share of foreign loans are substantially higher than at the DFBs (cf. table 3). Moreover, off-balance sheet positions, counterparty credit risk from financial derivatives and securities financing transactions, as well as loans to banks play a more prominent role.

UBS's domestic loan portfolio consists primarily of retail residential mortgages and loans to non-financial corporations. In addition, UBS has significant foreign credit exposure through its wealth management and investment banking businesses, which exposes the bank to global macroeconomic and financial market developments.

In terms of RWA, credit exposures to corporate counterparties, arising from global investment banking and Swiss corporate banking, are most material. UBS's credit exposures to retail counterparties, arising from residential mortgages and Lombard loans, are less material in terms of RWA due to their lower average risk weight.³⁶

UBS's RWA for credit risk increased by approximately 75% in Q2 2023 due to the acquisition of Credit Suisse. Credit exposure to corporate counterparties contributed

³⁶ As at end-2023, 53% of UBS's RWA for credit risk (including counterparty credit risk) was from credit exposures to corporate counterparties, whereas 31% was from credit exposures to retail counterparties.

most to this increase. The average risk weight of UBS's exposure to the private non-bank sector increased from 28% in Q4 2022 to 30% in Q4 2023, due to the relatively high amount of corporate loans acquired from Credit Suisse, which usually carry a higher risk weight than retail exposures.

LTI ratios point to affordability risks in residential investment segment

For new mortgages in the overall banking sector, loan-to-income (LTI)³⁷ ratios point to high affordability risks. This applies in particular to residential investment properties held by private and commercial borrowers. In these segments, LTI figures have remained at high levels, even after a decrease in 2023. Accordingly, the proportion of new mortgages for which, at a mortgage rate of 3%, debt service and maintenance costs would exceed rents, was 29% (households) and 17% (commercial borrowers) in 2023 (dark red shaded area in chart 4.14). By comparison, interest rates on new mortgages were 2.24% at the end of 2023. Furthermore, the repricing maturity has fallen significantly since 2022, making borrowers more vulnerable to rising interest rates. In 2023, more than 40% of new loans had an average repricing maturity of less than six months.

³⁷ The LTI is the ratio between the credit limit approved by the bank (loan) and the income. For the owner-occupied residential property segment, a standardised definition of income is used, which consists of the borrower's net employment or pension income. Other elements that have a positive impact on affordability (e.g. bonuses, investment income and financial wealth), as well as those with a negative impact (e.g. leasing or interest payments on other bank loans), are not taken into consideration. For the residential investment property segment, income consists of net rents from the property.

LOAN PORTFOLIO OF THE SWISS BANKING SECTOR

Loans to the non-bank sector;¹ as at end-2023

Table 3

	DFBs	UBS	Other banks	All banks
Total loans¹ (share of total assets)	68%	37%	33%	50%
Mortgage loans (share of total loans)¹	89%	57%	20%	71%
Of which domestic loans ²	89%	50%	9%	68%
Other secured loans (share of total loans)¹	3%	33%	68%	20%
Of which domestic loans ²	3%	5%	10%	4%
Unsecured loans (share of total loans)^{1,3}	7%	10%	12%	9%
Of which domestic loans ²	7%	4%	5%	6%

¹ Total loans refers to loans and advances to customers on the balance sheet (excluding exposures to banks and off-balance sheet exposures).

² Domestic refers to the location of the real property for mortgages and to the domicile of the customer otherwise.

³ Credit risk of unsecured loans may be mitigated by credit enhancements such as guarantees.

Source(s): SNB

While LTI ratios for new mortgage loans have generally increased over recent years, loan-to-value (LTV)³⁸ ratios have decreased (cf. chart 4.15). Mortgage loans with lower LTV ratios are generally considered less risky, as they are less exposed to a price correction on the real estate market. One reason for the decrease in LTV ratios is the revised self-regulation of the Swiss Bankers' Association, which stipulates a minimum down payment of 25% of the lending value in the investment segment (previously 10%). However, this requirement will be lifted with the introduction of Basel III in 2025. This could lead to a reversal of the trend even though the new rules impose higher risk weights for high-LTV investment property mortgages. In view of the persistent risks in the investment property segment, FINMA recommends that banks will

continue to maintain the 25% minimum down payment going forward.³⁹

While LTI and LTV ratios for new mortgage loans are key risk indicators, they provide an incomplete picture of the overall risk situation in the domestic mortgage market. For instance, the analysis of tax data, which allows for a more comprehensive assessment of affordability risks, suggests that LTI figures overestimate both the level and the dynamics of affordability risks for households (cf. SNB Financial Stability Report 2022, pp. 35–36). Unfortunately, the coverage of such data is limited to households in two cantons and no comparable data are available for commercial borrowers.

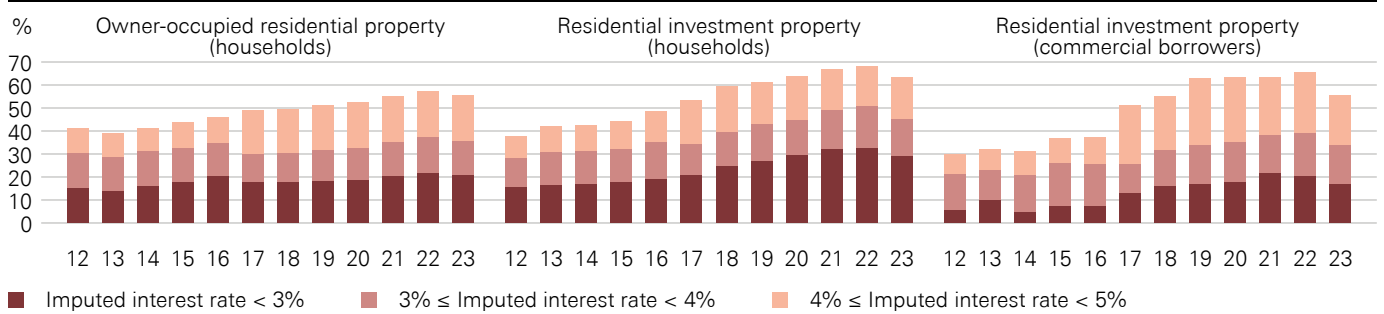
38 The LTV reported here is the ratio between the credit limit and the market value of the pledged property. At most banks, the market value differs only slightly from banks' internal valuations of the pledged property.

39 Cf. FINMA press release of 27 March 2024.

LOAN-TO-INCOME OF NEW MORTGAGE LOANS¹

Proportion where imputed costs exceed rents (inv. prop.) or one-third of income (owner-occ.) at an imputed interest rate of up to 5%²

Chart 4.14



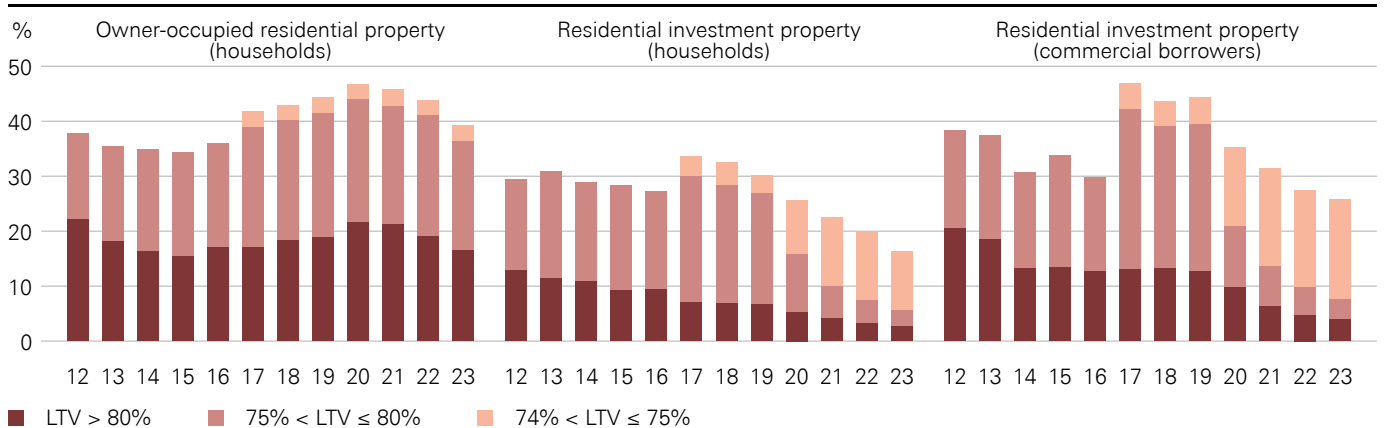
1 From 2017 on, data from the revised 'Survey on new mortgages' are shown. For the current year, data up to the current reporting quarter are displayed.
 2 The dark red shaded area shows the proportion where imputed costs exceed rents or one-third of income at an imputed interest rate of up to 3%. The red shaded area shows the additional proportion for an imputed interest rate of between 3% and 4%. The pale red shaded area shows the additional proportion for an imputed interest rate of between 4% and 5%. Besides the imputed interest rate (5%, 4%, 3%), the imputed costs comprise maintenance and amortisation costs (1% each). In the residential investment segments, the thresholds correspond to LTI ratios over 20 (dark red), between 16.7 and 20 (red), and between 14.3 and 16.7 (pale red).

Source(s): SNB

LOAN-TO-VALUE OF NEW MORTGAGE LOANS

Proportion of new loans with LTV over 74%, 75% and 80%¹

Chart 4.15



1 Measurement of the 74–75% share has only been possible since 2017 (start of the SNB's revised survey on new mortgages).

Source(s): SNB

In order to improve risk assessment capabilities for the domestic credit market, the SNB and FINMA launched a project in 2022 aiming at collecting a new, richer loan-by-loan dataset. Work on the data model, which builds on the experience with loan-by-loan data in other countries, is currently underway in close cooperation with the banking industry.

Limited effect of interest rate increases on credit quality

For the banking sector as whole, the rise in interest rates since 2022 has had only a limited effect on credit quality. Overall, credit loss expenses⁴⁰ increased slightly to 0.1% of outstanding loans in 2023, which continues to be low in historical comparison.⁴¹ Accordingly, credit quality remained high, as shown by the low level of value adjustments and the small share of impaired loans in 2023 (0.6% and 0.8% of the total loan portfolio, respectively). The increase was stronger for foreign credit exposure and more pronounced within the ‘Other banks’ category, reflecting the impact of insolvencies related to the Austrian Signa Group. The overall impact of this insolvency event was immaterial for the Swiss banking sector as a whole.

For DFBs, credit loss expenses in 2023 increased moderately but remained low by historical comparison. Credit quality indicators such as the level of value adjustments and the share of impaired loans remained largely unchanged at low levels (0.5% and 0.6% of the total loan portfolio, respectively).

For UBS, credit loss expenses also increased moderately in 2023 but remained significantly lower than in 2020, when banks had expected a considerable increase in credit losses due to the outbreak of the pandemic.⁴² The overall credit quality of UBS’s loan portfolio remains robust. Only 0.8% of the total loan portfolio was impaired at end-2023.

Swiss banking sector’s credit quality so far unaffected by developments in US and German commercial real estate markets

So far, the adverse developments in the US and German commercial real estate markets have had no impact on Swiss banks. The Swiss banking sector has limited exposure to these markets overall. In particular, DFBs’ direct exposure through mortgages is contained based on available data. For the ‘Other banks’, direct exposure through mortgages is also limited. While UBS has mortgage-related exposures to the residential real estate sector in the US and

Germany, its direct exposure to commercial real estate outside Switzerland is likewise limited.⁴³ For individual banks, and in particular for UBS, an indirect impact through their broader exposure to US claims remains possible. More generally, a reassessment might become necessary as the situation evolves.

4.2.2 MARKET RISK

Market risk is the risk of loss arising from adverse movements in market variables. From a narrow perspective, market risk arises mainly in the regulatory trading book, where all positions have to be marked to market on a daily basis. The regulatory framework primarily captures this source of market risk.⁴⁴ From a broader perspective, all financial instruments carried at fair value, for example equity investments in the banking book, are affected by movements in market prices and are a source of market risk. The valuation uncertainty of complex or illiquid financial instruments, which increases in volatile and distressed market conditions, represents yet another type of market risk, as banks must reflect this valuation uncertainty for fair value instruments in regulatory capital (cf. comments on prudent valuation in subchapter 4.2.6). Unrealised mark-to-market losses on held-to-maturity positions, which may have a large impact on banks, are discussed in subchapter 4.2.3.

Basel III reforms provide new approach for market risk in trading book

The Basel Committee on Banking Supervision (BCBS) has recalibrated the regulatory market risk framework for the trading book, which will be implemented as part of the final Basel III reform package. The revised regulatory approach better addresses market risk observed during stress periods, when the applied hedging strategies in the trading book may not fully protect against very large market shocks and volatility.⁴⁵ According to the regulatory impact assessment of the amendment to the Capital Adequacy Ordinance, RWA for market risks in the Swiss banking sector will increase by 95% as a result of the Basel III reforms. Despite this significant increase, RWA for market risk are expected to contribute less than 10% to total RWA of the Swiss banking sector.

Market risk is low overall for DFBs

Generally speaking, DFBs are not materially exposed to market risk. Most of them do not have a significant trading portfolio. Market risk accounts for about 2% of their RWA on average, with little variation across banks (cf. chart 4.11).⁴⁶

40 Credit loss expenses as reported in the income statement.

41 Following the much stronger rise in interest rates in the late 1980s and early 1990s, credit loss expenses were substantially higher. According to the annual report 1997 of the Swiss Federal Banking Commission, cumulated credit losses between 1991 and 1996 reached 8.5% of the outstanding loan amount (SFBC Annual Report, p. 17, www.finma.ch/FinmaArchiv/ebk/d/publik/bericht/index.html; full report only available in German or French).

42 The total credit loss expenses of UBS and Credit Suisse increased from CHF 0.2 billion in 2022 to approximately CHF 0.4 billion in 2023 (excluding expenses for the initial recognition of Credit Suisse positions). Both numbers lie significantly below the CHF 1.7 billion collectively recorded by the two banks in 2020.

43 Approximately 80% of UBS’s commercial real estate exposure is located in Switzerland, about 10% (approximately USD 3.5 billion) is located in the US.

44 RWA for market risk capture all market risks in the trading book and, additionally, FX and commodity risks in the banking book.

45 The mutual hedging of derivatives and trading positions may be impaired by very large market shocks. Previously strongly correlated risk factors may suddenly behave differently in a stress scenario (basis risk). Furthermore, the risk profile of non-linear derivatives may change substantially under such a scenario.

46 From a broader perspective, market risk may also arise from financial instruments not carried at fair value in the banking book. For example, this is relevant for banks with large portfolios of financial assets (cf. unrealised mark-to-market losses on held-to-maturity positions in subchapter 4.2.3).

Of the three DF-SIBs, ZKB holds a larger trading portfolio than PostFinance and Raiffeisen Group and is therefore more exposed to market risk. For ZKB, these trading positions represent about 5% of its RWA, which is still low compared to the contribution of credit risk exposure.

Market risk is more relevant for UBS and ‘Other banks’

UBS has a large trading portfolio, where it mitigates market risk with hedging strategies. While trading assets and derivatives represent 18% of UBS’s leverage ratio exposure, market risk accounts for only 4% of total RWA under the current approach. The underlying reason is that positions in the trading book are often hedged, which reduces their RWA contribution.⁴⁷ For the ‘Other banks’, the share of market risk amounts to 8% of total RWA on average, with significant variation within the category.

Despite the relatively low RWA contributions, market risk remains a relevant risk category for UBS. First, the current RWA do not yet reflect the Basel III reforms. Second, RWA for market risk cover market risks only in a narrow perspective. Market risks in a broader perspective, which may arise from fair value positions in the banking book and from valuation uncertainty of complex or illiquid fair value positions, are relevant for UBS.⁴⁸ The Basel framework addresses valuation risks through its guidance on a prudent valuation of fair value instruments.

47 Value at risk (VaR), a statistical measure for the short-term loss potential in the trading book and one of the inputs for calculating market risk RWA, is relatively small due to the hedging of the different trading book positions. At the end of 2023, regulatory VaR (10-day time horizon and 99% confidence level) was USD 24 million at Credit Suisse, and USD 46 million at UBS Group excluding Credit Suisse (cf. UBS’s Pillar 3 report).

48 For example, UBS held equity investments and investment fund units totalling USD 7.2 billion as at end-2023, which were classified as financial assets at fair value not held for trading or as investments in associates. The risk of these positions is covered under the credit risk framework of the Basel standards.

4.2.3 INTEREST RATE RISK

Interest rate risk results from a mismatch between the repricing maturities of a bank’s assets and liabilities. Banks typically use short-term liabilities (i.e. deposits with potentially short, but contractually undefined, repricing maturities) to refinance long-term assets (i.e. loans with relatively long, but contractually defined, repricing maturities). The result of such maturity transformation, which is a key economic function of banking, is that interest rates on assets are locked in for longer than interest rates on liabilities. This exposes banks to upward shocks in interest rates, as interest expenses rise faster than interest income. Besides interest rate shocks, other shocks that negatively affect a bank’s reputation or creditworthiness can also lead to an increase in its interest expenses, as experienced in the crisis at Credit Suisse.

The net present value (NPV) approach described in this section focuses on a mark-to-market valuation of banks’ assets and liabilities, while accounting for interest rate hedges. In other words, the NPV approach (also referred to as the economic value of equity) measures the isolated effect of standardised interest rate changes on the discounted value of future cash flows associated with banks’ assets and liabilities. As such, the NPV approach complements the earnings approach used in the SNB’s scenario analysis. The earnings approach simulates the effect of an interest rate shock (within the broader context of a complete macroeconomic scenario) on banks’ earnings resulting from changes in interest income (e.g. higher interest rates on mortgage loans) and costs (e.g. higher interest rates on banks’ deposits) over a given time horizon (cf. special topic in subchapter 5.4).

Most banks in Switzerland would be negatively affected by upward shift in interest rates

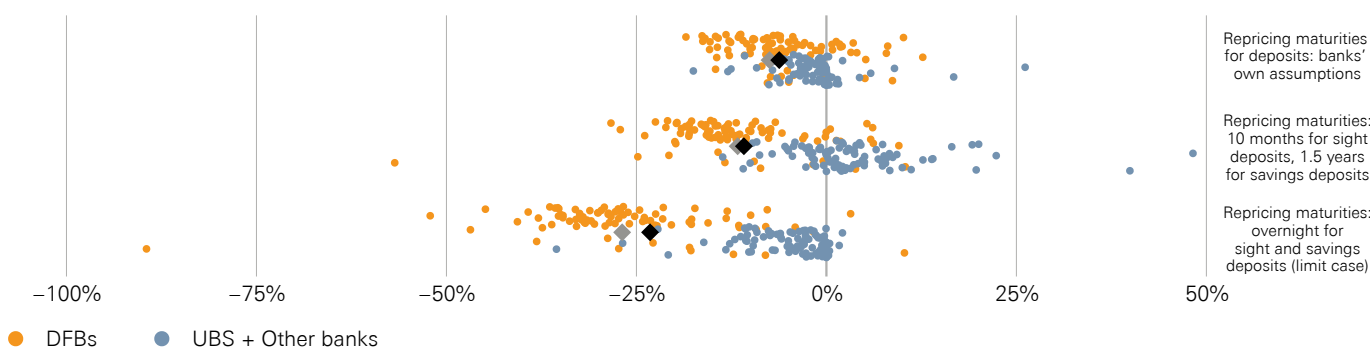
Overall, the banking sector’s exposure to interest rate risk declined slightly between 2022 and 2023, but it remains substantial (cf. chart 4.16, grey and black diamonds in each

INTEREST RATE RISK OF BANKING SECTOR

Impact of a 200 bp parallel interest rate increase according to different assumptions for the repricing maturities¹ of deposits (NPV impact in percent of Tier 1 capital, as at Q4 2023)

Chart 4.16

Diamond = average of banking sector (light grey is Q4 2022)



1 Repricing maturity refers to the time period before the interest rate on an interest-bearing asset or liability position is reset.

Source(s): FINMA, SNB

point cloud).⁴⁹ On average, the DFBs are more exposed to interest rate risk than the ‘Other banks’. UBS’s interest rate risk exposure lies in between.

The measurement of interest rate risk in the banking book depends largely on the repricing assumptions for deposits without contractual repricing maturities, such as sight and savings deposits. The interest rate sensitivity of these positions depends on the behaviour of the bank’s customers: Banks will adjust the interest rates on such positions more frequently, leading to shorter repricing maturities, if customers are more likely to move their deposits to other banks or other products offering more attractive conditions. Assuming, in the limit case, that the repricing occurred overnight for sight and savings deposits, the average NPV of assets and liabilities would decline by around 23% of Tier 1 capital in response to a parallel interest rate increase of 200 basis points (cf. chart 4.16, black diamond represents average in lower point cloud). In practice, the NPV impact is mitigated by the fact that banks can, to some extent, delay the repricing of deposits in response to a shift in interest rates, depending on the behaviour of their competitors and clients. Under the banks’ own behavioural assumptions – which vary across banks – the impact of the same 200 basis point parallel interest rate increase would amount to an average NPV decline of 6% of Tier 1 capital (cf. chart 4.16 black diamond in upper point cloud). Assuming repricing maturities of 1.5 years for savings deposits and 10 months for sight deposits for all banks, the impact would be 11% of Tier 1 capital (cf. chart 4.16, black diamond in middle point cloud).^{50,51}

When determining their exposure to interest rate risk, banks should make sure that their risk tolerance is on a par with their risk-bearing capacity, even under conservative repricing assumptions regarding customer behaviour. This is all the more important as the uncertainty regarding depositor behaviour will remain high going forward. Compared to the period before 2009, when interest rates on sight and savings deposits last were significantly above zero, new competitors have emerged, digital banking has become ubiquitous, and a new generation of customers with potentially different behaviours has entered the market.

DFBs’ exposure to interest rate risk remains substantial

On average, the DFBs’ NPV would decline, depending on repricing assumptions, by 8% and 16% of Tier 1 capital (cf. chart 4.16, upper and middle orange point clouds) in response to a parallel interest rate increase of 200 basis

points. For some banks, however, the impact could be significantly higher, reaching up to 60% of Tier 1 capital (cf. chart 4.16, middle orange point cloud).

Interest rate risk exposure is relevant for the three DF-SIBs. At Raiffeisen Group and ZKB, interest rate risk stems mainly from financing longer-term mortgage loans with shorter-term retail deposits. By contrast, PostFinance’s interest rate risk stems from financing longer-term financial assets with shorter-term retail deposits. Hence, the DF-SIBs use retail deposits to finance different types of assets (mortgages vs. financial assets) that, however, have similar repricing maturity characteristics.

UBS exposed to interest rate risk in Swiss francs and foreign currencies

Due to its global activity, UBS is exposed to interest rate risk in several currencies. UBS actively manages and hedges interest rate risk in the banking book, using derivatives. To the extent that actual repricing maturities of customer deposits can deviate from modelled repricing maturities, the bank is exposed to additional interest rate risk in the banking book, in a similar way to the DFBs. The impact of a 200 basis point parallel upward interest rate increase in all currencies on the bank’s Tier 1 capital is currently below the average impact for the DFBs. This is valid for analyses based both on the bank’s own assumptions and on fixed assumptions (cf. chart 4.16). UBS’s regulatory disclosure indicates that its exposure is in line with that of its European peers.⁵²

Experience from 2023 banking turmoil in US shows that excessive exposure to interest rate risk can trigger liquidity shocks

The 2023 banking turmoil in the US resulted in three bank failures (Silicon Valley Bank, Signature Bank and First Republic Bank) that were directly related to weaknesses in managing interest rate risk.⁵³ Following the rapid rise of market interest rates, the three banks accumulated substantial unrealised losses on their hold-to-maturity fixed-rate assets. Without liquidity shocks, these unrealised losses would have materialised only gradually (as the funding costs of these positions increased due to the higher interest rates). However, concerns regarding the banks’ viability spurred widespread and rapid deposit outflows, forcing these banks to sell their fixed-rate assets at significant losses. As a result, the unrealised losses materialised immediately, causing the three banks to fail.

For banks in Switzerland, the potential impact of a similar dynamic would be material. As seen in the lower point cloud in chart 4.16, the potential impact on banks’ NPV of

49 The heterogeneity across banks regarding the extent of their exposure to interest rate risk is large, reflecting differences in the composition of their assets and liabilities as well as their hedging behaviour. In contrast to the low and negative interest rate environment, where the NPV approach tended to overestimate the exposure to an interest rate shock, in a positive interest rate environment this is no longer the case (cf., for example, SNB Financial Stability Report 2022, p. 37).

50 The fixed assumptions are repricing assumptions for positions with no contractually defined maturity that are constant over time and that are the same for all banks.

51 FINMA Circular 2019/02 ‘Interest rate risks – Banks’ provides indications regarding outlier classification and potential supervisory measures.

52 In the ‘regulatory outlier test’ as at 31 December 2023, the NPV of banking book positions would decline by 5.2% of Tier 1 capital for UBS according to BCBS specifications, in line with the median of 5.1% for its European peers. Rates across all tenors increase by 150 bps for the Swiss franc, 200 bps for the euro and the US dollar, and 250 bps for the pound sterling.

53 Cf. Federal Reserve Board, Financial Stability Report, May 2023 (www.federalreserve.gov/publications/files/financial-stability-report-20230508.pdf) for details.

a 200 basis point parallel interest rate increase would be large, corresponding to about 23% of the banks' Tier 1 capital base on average.

4.2.4 BUSINESS RISK

Business risk refers to the risk of reduced revenues, in particular due to a drop in business volume or client activity, combined with cost rigidity. Business risk can materialise when market conditions are unfavourable but also in the case of idiosyncratic events, such as reputational damage. In this case, an outflow of client assets reduces recurring fees and damages the deposit franchise. The risk of a reduction in net interest income (interest rate risk in the banking book) is discussed separately in subchapter 4.2.3.

Business risk can be a very material source of risk for banks, depending on their business model. Net fee and commission income as well as trading income are revenue sources that are particularly prone to business risk. In the wealth management and asset management businesses, revenues consist primarily of recurring fees, which depend on the volume of client assets, and transaction-based fees, which depend on client activity. In the investment banking business, the demand for advisory services and financial transactions depends both on client activity and on the prevailing market conditions, affecting fees and trading income.

As there are no specific RWA requirements for business risk and therefore no Pillar 1 capital requirements, it is particularly important that this risk category is assessed through stress tests and, if necessary, covered by Pillar 2 requirements.

Business risk at DFBs is limited in the short to medium term

DFBs are exposed to business risk mainly through a potential reduction of net fee and commission income in the event of adverse market conditions. This source of income for these banks currently represents around 20% of their revenues (cf. chart 3.4 in chapter 3). In general, business risk is therefore limited for DFBs, at least in the short to medium term. In the longer term, these banks are exposed to structural changes in the domestic mortgage market which could result from changes in the regulatory environment, such as a removal of tax incentives that encourage mortgage debt holding.

Of the three DF-SIBs, ZKB and PostFinance rely more on net fee and commission income than Raiffeisen Group does and are therefore more exposed to the risk of reduced revenues. These revenues account for around 30% of total income at ZKB and PostFinance, compared with around 15% at Raiffeisen Group. While ZKB's fee and commission income stems mainly from wealth management and asset management activities, PostFinance's income relies more on commissions from other services, notably commissions on payment transactions.

UBS and 'Other banks' have significant exposure to business risk through wealth management and investment banking activities

For UBS, global wealth management is the main business division. Investment banking and asset management are two other business divisions with significant exposure to business risk. Net fee and commission income and trading income account for approximately three quarters of UBS's revenues. The contribution is similar for the 'Other banks' (cf. subchapter 4.1.1).

Banks can mitigate business risk if they are able to reduce costs in response to decreasing revenues. In the case of the crisis at Credit Suisse, however, costs proved to be rigid. Adjusted operating expenses even increased slightly in 2022 compared to the previous year, while revenues dropped sharply. UBS is still incurring substantial and protracted costs in its non-core and legacy division, where a large part of Credit Suisse's former investment bank is being wound down. This shows that business risk is particularly relevant where banks are dealing with complex financial instruments with long maturities.

4.2.5 OPERATIONAL RISK

Operational risk is the risk of loss due to inadequate procedures, fraud, failed internal systems, or external events. It also includes legal risk, cyber risk, outsourcing risk and events such as a power shortage. Capital requirements for operational risk constitute an important share of the RWA at UBS (27%) and at the 'Other banks' (27%), as shown in chart 4.11. This contribution is high in comparison to other G-SIBs,⁵⁴ and to DFBs (6.4% of total RWA).

As the number of cyber incidents in the financial sector is increasing, operational risk, and cyber risk in particular, has become a growing concern for financial stability. Financial institutions are primarily responsible for adequately protecting themselves against cyber risk. However, given the high level of interconnectedness in the financial system, regulation and supervision are also necessary contributors to operational and cyber resilience (cf. special topic in subchapter 5.5).

UBS's capital requirements for operational risk RWA reflect complexity of its international business activities

The high contribution of capital requirements for operational risk to the RWA at UBS reflects the complexity of UBS's international business activities and the combined operational loss history of UBS and Credit Suisse. The loss history includes several costly litigations, originating primarily from wealth management and investment banking activities.

⁵⁴ At end-June 2023, operational risk as a share of G-SIBs' minimum required capital averaged around 13% (cf. BCBS, 'Basel III Monitoring Report', March 2024).

Under the final Basel III standards that will enter into force in 2025, UBS will no longer be allowed to model its capital requirements for operational risk based on an internal model approach. The new standardised approach for operational risk will, however, still reflect the bank's risk profile. Capital requirements for operational risk will be proportional to an internal loss multiplier, which depends on a bank's loss history over the previous ten years.

4.2.6 LESSONS LEARNT FROM THE CRISIS AT CREDIT SUISSE – RISK ASSESSMENT

In the crisis at Credit Suisse, losses occurred primarily from risk categories for which no specific capital requirements exist under Pillar 1 of the Basel framework. For example, Credit Suisse was very exposed to business risk, which is not reflected in the RWA. As a result, regulatory capital ratios overestimated the bank's resilience. The case of Credit Suisse illustrates the need for a comprehensive risk assessment of banks that goes beyond Pillar 1 capital requirements and includes the viability of their business model.

In the Basel framework, the goal of the Pillar 2 supervisory review process is to ensure that banks have adequate capital and liquidity to cover all the risks in their business, especially with respect to risks not fully captured under Pillar 1. In its report on banking stability, the Federal Council proposes to strengthen FINMA's legal basis for institution-specific Pillar 2 capital surcharges for systemically important banks based on stress tests and ongoing supervision. Furthermore, the Federal Council proposes to tighten the regulatory requirements for prudent valuation of complex fair value positions, where the Basel framework provides only principle-based guidance.

Forward-looking approaches such as stress tests are essential tools for holistic risk assessment

A holistic assessment of a bank's risk exposure should not only quantify the risk on its balance sheet but should also take into account the risks inherent in its business model. The losses that Credit Suisse incurred in the crisis were triggered by a series of idiosyncratic events, which started a vicious circle of deteriorating confidence among clients and investors and falling revenues. Outflows of client assets and the bank's decision to exit certain businesses left it with substantially lower revenues, but rigid costs. In 2022, Credit Suisse's adjusted net revenues dropped by 33%, while adjusted operating expenses even increased slightly. Deteriorating creditworthiness and reputational damage led to increasing funding costs and a further reduction in business volumes. With the exception of operational risk, such business model-related risks are not captured by regulatory capital requirements.

Forward-looking approaches such as stress tests may capture these risks, but they must also be enhanced for this purpose. For example, stress tests can readily account for a weaker business model that generates lower profits in the baseline scenario. More relevant, but also more difficult to assess, is the risk that in a stress scenario, business models may become fragile or even collapse. In both cases, when profitability as the first line of defence is weakened, capital, as the second line of defence, should be strengthened through Pillar 2 surcharges.

Market-based indicators of a bank's resilience may provide complementary information to stress tests. Taking into account both types of forward-looking indicators increases the probability that corrective measures are taken in a timely manner. The SNB therefore supports the proposed measures in the Federal Council's report on banking stability aimed at strengthening Pillar 2 capital requirements in the Swiss TBTF regulations based on a forward-looking assessment, including stress tests and market-based indicators.⁵⁵

Valuation risks of complex positions may be significant and should be addressed by stringent approach for prudent valuation adjustments

Valuation risks are particularly relevant for complex or illiquid positions in the investment banking business. In the regulatory framework, these risks are not captured under the RWA framework but must instead be addressed using a prudent valuation. Despite its relatively large investment banking business with complex derivatives, Credit Suisse reported prudent valuation adjustments (PVAs) totalling just CHF 0.3 billion as at the end of 2022. At the time of the acquisition, however, there was considerable uncertainty regarding the valuation of Credit Suisse's complex positions, and UBS requested a loss protection agreement from the federal government for a portfolio of difficult-to-assess assets, should such losses exceed CHF 5 billion. At the closing of the acquisition in June 2023, UBS had to make valuation adjustments of around USD 4.8 billion on fair value positions acquired from Credit Suisse. In August 2023, UBS terminated the loss protection agreement voluntarily.

Although the BCBS's general principles on prudent valuation apply in Switzerland, there is no provision in Swiss regulations for quantitative regulatory approaches in this regard, such as exist in the EU for example. The SNB supports the proposed measure in the Federal Council's report on banking stability to tighten the regulatory requirements in Switzerland with respect to prudent valuation.

⁵⁵ Measure 14 in the Federal Council report: "Introduce forward-looking elements into the institution-specific capital surcharge (Pillar 2), based in particular on stress tests; examine how best to disclose the results".

4.3 SNB SCENARIO ANALYSIS

The analysis of stress scenarios allows the assessment of banks' resilience to adverse macroeconomic and financial conditions. The impact of adverse developments on banks, through the risk categories discussed in previous sections, provides a comprehensive measure of their overall risk exposure. Such analysis therefore constitutes a forward-looking economic assessment of the capital adequacy of banks based on their ability to absorb losses and complements the regulatory capital figures discussed in subchapter 4.1.2. The SNB's scenario analysis currently focuses on the DFBs and UBS as they are the primary providers of systemically important functions in Switzerland. The SNB does not disclose quantitative results for individual banks.

The SNB considers a baseline and stress scenarios for developments in the economic environment and in financial market conditions. The baseline scenario reflects the current economic and financial environment and describes the most likely outcome given the information currently available. By contrast, the stress scenarios are designed for systematically analysing the vulnerabilities and resilience of the Swiss banking sector. They assume highly unfavourable developments that are unlikely but possible and cover a broad spectrum of relevant risk factors. The calibration of shocks is guided by historical experience.

The SNB periodically estimates the impact of the stress scenarios on banks, irrespective of how likely a given scenario is considered to be in the short term. To enable the comparison of stress analyses over time, the SNB generally keeps key ingredients of the stress scenarios unchanged relative to previous years' Financial Stability Reports. For example, stressed peak values for interest rates in this year's interest rate shock scenario would typically remain unchanged compared to previous years.

In addition to the risks covered by these scenarios, operational risks (including legal and cyber risks) can materialise, in most cases independently of the underlying economic scenario. The analysis of operational risks requires in-depth, off and on-site bank supervision, which lies within FINMA's remit. The imputed losses from operational risk in the SNB's scenario analysis are based on regulatory capital requirements for operational risk, which in turn are based on historical loss experience. These losses are identical for all stress scenarios.

4.3.1 BASELINE AND STRESS SCENARIOS

To capture the different sources of risk to the Swiss banking sector, the SNB considers a baseline and four stress scenarios. The SNB's baseline scenario assumes that global economic growth will be moderate in the coming quarters. Consumers' purchasing power is expected to gradually recover and the dampening effect of the monetary policy tightening to ease slowly. Inflation is projected to decline further. In Switzerland, growth is moderate and inflation remains within the range of price stability.

Global recession: A severe V-shaped global recession unfolds. Global financial stress rises significantly, and residential and commercial real estate prices, as well as stock prices, drop sharply. Global interest rates decline.⁵⁶

Interest rate shock: In this stress scenario, persistently high inflation triggers a further surge in global interest rates. Subsequently, economic growth stalls, and residential and commercial real estate prices, as well as stock prices, fall sharply.

Emerging markets crisis: Emerging economies experience a severe recession with an abrupt rise in domestic bond spreads and a sharp drop in stock prices. Advanced economies experience a mild recession, but major financial stress. Global interest rates decline.

Protracted euro area recession: This stress scenario involves a protracted recession in the euro area. Stock prices drop and corporate spreads widen globally. In many countries, including Switzerland, real estate prices fall significantly. In Switzerland, there is also a protracted recession and interest rates return to very low levels for an extended period.

The first two stress scenarios offer benchmarks for adverse developments in real estate markets, including a substantial price correction in the commercial real estate segment – the global recession scenario in an environment of low interest rates, the interest rate shock scenario in an environment of high interest rates.

4.3.2 IMPACT OF STRESS SCENARIOS

Stress losses would be significant for DFBs, but capital buffers should ensure adequate resilience

The interest rate shock scenario and the protracted euro area recession scenario are the most relevant for DFBs. The global recession and the emerging market scenarios are less relevant for these banks due to the short (V-shaped) recessions assumed in the scenarios for Switzerland and given the banks' limited exposures abroad that these scenarios primarily affect.

Under the interest rate shock scenario, most of the DFBs would experience substantial losses. The losses from their credit portfolios would mainly be driven by higher mortgage interest rates, leading to a materialisation of affordability risks, and by a pronounced drop in real estate prices, exposing a proportion of the banks' mortgage portfolios to under-collateralisation. Mortgages in both the residential and commercial segments would be affected. Furthermore, due to their high level of maturity transformation, banks would incur a decline in net interest income. As interest rates rise further, funding costs would increase faster than interest income (cf. special topic in subchapter 5.4).

⁵⁶ This scenario definition is similar to the 'severely adverse scenario' in the US Federal Reserve's 2024 stress test.

Under the protracted euro area recession scenario, around half of the DFBs would incur moderate losses. Losses on corporate loans and mortgages would increase markedly, driven by lower economic activity, higher unemployment and falling real estate prices. Furthermore, net interest income would decline as maturing loans would be renewed at lower rates, while the pass-through to funding costs would be limited by the zero lower bound on some liability positions. Banks' net fee and commission income as well as their trading income would also decrease due to stress on the financial markets.

Both scenarios would negatively impact the capital situation of DFBs, but to a different magnitude. Under the interest rate shock scenario, losses would be larger than under the protracted euro area recession scenario and deplete a substantial part of these banks' capital buffers. In the absence of counteracting measures by banks, such as reducing lending or building up capital, a small number of banks would fall below the specific capital buffer target levels set by the Capital Adequacy Ordinance, and approach regulatory minima.

Overall, though, most DFBs should be able to absorb the losses incurred under such a scenario without their capital ratios falling below regulatory minima and continue to fulfil their role as credit providers to households and companies. Compared to the scenario analysis in last year's Financial Stability Report, the DFBs' resilience to shocks has further increased, as a result of both higher capital buffers and improved profitability.

Loss potential for UBS remains substantial under stress scenarios

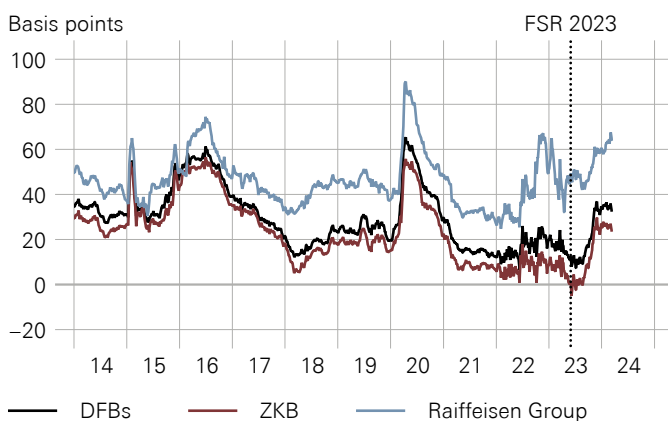
The loss potential for UBS under the various stress scenarios remains substantial and is highest under the global recession scenario. Credit losses in this scenario ensue from corporate loan portfolios and counterparty exposures in investment banking, as well as from retail and corporate loan portfolios in Switzerland. Business risk also plays an important role in this scenario, as the severe market shocks reduce client assets and client activity, leading to lower fee and commission income. Moreover, these financial market shocks result in significant mark-to-market losses on fair-valued credit, securitisations and equity positions.

The protracted euro area recession, interest rate shock, and emerging markets crisis scenarios have a smaller but still substantial impact on UBS. The losses under these scenarios originate from the same risk categories as under the global recession scenario, but their relative contributions differ. In the emerging markets crisis scenario, for example, mark-to-market losses and business risk play a particularly important role due to the very severe financial market stress. By contrast, credit losses are moderate, as the recession in advanced economies is milder.

In all stress scenarios, UBS's capacity to absorb losses is affected by ongoing integration-related costs and the expected losses in the non-core and legacy division, which are already taken into account in the baseline scenario. Moreover, the wind-down of legacy positions could be more difficult and expensive in stress scenarios with severe financial market shocks. As UBS progresses with the announced risk and cost reduction measures, its resilience to stress scenarios should improve.

SENIOR BOND SPREADS¹

Maturity 2–8 years, volume-weighted Chart 4.17

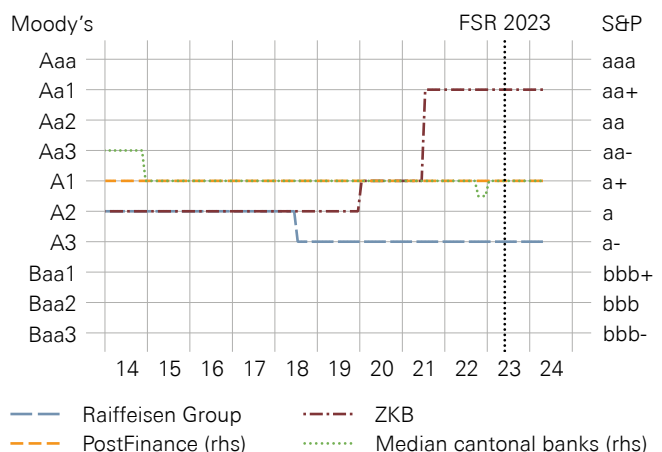


¹ Swiss overnight index swaps (OIS) are used as risk-free rates.

Source(s): SNB

BANK RATINGS

Standalone ratings Chart 4.18



Source(s): Bank websites, Bloomberg

4.4 MARKET ASSESSMENT

Market-based indicators reflect market participants' assessments of banks' creditworthiness, resilience and expected future profitability and provide a useful complement to regulatory metrics and scenario analysis. They are available at high frequency and can provide early signals regarding the deterioration of the financial situation of the bank, even if this is not yet visible in regulatory metrics. Although the assessment based on market-based indicators may be 'noisy' and at times differ from the assessment based on fundamentals, these indicators should be an integral part of supervisory judgement, particularly in the context of early intervention. As shown by the crisis at Credit Suisse, a strong deterioration of market-based indicators may trigger an irreversible loss of confidence and jeopardise the recovery efforts of a bank.

For UBS, the assessment of creditworthiness is based on credit default swap (CDS) premia. For DFBs, given the absence of CDS premia, the assessment is based on spreads between the banks' senior bond yields and risk-free overnight index swaps (OIS) with the same maturity. Additionally, banks' standalone credit ratings and the ratio of market capitalisation to total equity are used as indicators of the banks' resilience and expected future profitability.

Overall, market-based indicators show that the market assessment of Swiss banks has improved over the past 12 months and that there are no signs of increased concern about the banks' resilience. In addition, market uncertainty about the integration of Credit Suisse into UBS has diminished.

No signs of market concerns for DFBs overall

According to market-based indicators, DFBs' creditworthiness has changed little over the past decade and remains high. Neither the gradual reduction of

these banks' profitability between 2009 and 2021 (cf. subchapter 4.1.1) nor the crisis at Credit Suisse has led to a deterioration of the DFB's creditworthiness.

This assessment is reflected, in particular, in the banks' senior bond spreads. The higher the perceived credit risk, the higher the senior bond spread. As shown in chart 4.17, DFBs' senior bond spreads⁵⁷ are in line with the average values observed over the last decade. This period saw no episode of distress affecting DFBs, despite a moderate spike in their bond spreads around the economic shock of the coronavirus pandemic and a small and non-material rise over the past two years due to the increase in interest rates.

Standalone ratings for the DF-SIBs and cantonal banks⁵⁸ have remained stable at high levels (cf. chart 4.18) and corroborate the assessment based on senior bond spreads. In particular, since the 2022/2023 increase in interest rates, these banks' standalone ratings have remained unchanged.

Market uncertainty around UBS has normalised to peer levels

UBS's creditworthiness, as measured by CDS premia, has improved since the completion of the Credit Suisse acquisition. The lower the perceived credit risk, the lower the CDS premia.⁵⁹ UBS's CDS premia have declined by around 40 basis points over the past year, bringing them back in line with international peers (cf. chart 4.19). This is around 20 basis points below the pre-crisis level at the end of February 2023. Meanwhile, peers' CDS premia have mostly moved sideways over the past year.

57 The coverage of the banks' senior bond yields, as a percentage of the aggregated balance sheets, is at 80% of all DFBs.

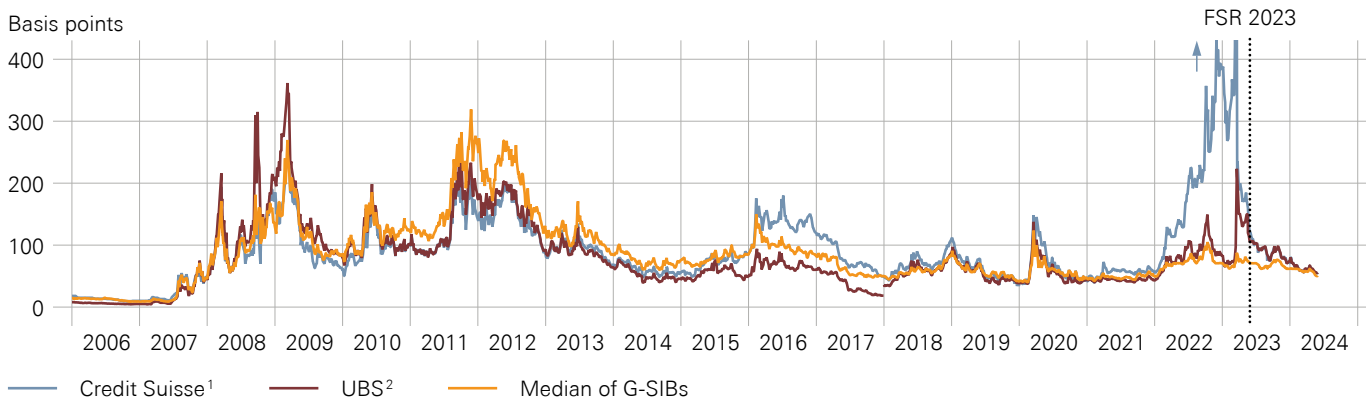
58 As the coverage of standalone ratings for the DFBs is low, only DF-SIBs' and cantonal banks' ratings are shown.

59 It is important to note, however, that market prices include market expectations of government support in a crisis (TBTF issue). CDS premia thus reflect the market's view of the likelihood that the underlying credit will be repaid. It is irrelevant whether the investment is repaid by the bank or by a third party such as the government.

INTERNATIONAL COMPARISON OF CDS PREMIA

Premia for credit protection (five-year senior)

Chart 4.19



1 Credit Suisse's CDS premia peaked well above 1,000 bps during the crisis in March 2023.

2 Up to end-2017, at operating company level (UBS AG); from 2018, at holding company level (UBS Group AG).

Source(s): Bloomberg, LSEG Eikon

The rating agencies reacted differently with regard to the acquisition of Credit Suisse. Moody's and S&P affirmed the standalone ratings of the UBS parent bank (UBS AG), arguing that the financial benefits of the acquisition outweigh the potential execution risks from the integration of Credit Suisse.⁶⁰ As a result, UBS AG's standalone rating remains one notch above the median for G-SIBs (cf. chart 4.20 for an international comparison based on Moody's standalone ratings). By contrast, Fitch downgraded UBS AG's standalone rating by one notch, citing concerns about execution risk.

UBS's ratio of market capitalisation over total equity (or price-to-book ratio), an indicator of expected future profitability, has improved and is now above 100%, as it was before the acquisition of Credit Suisse (cf. chart 4.21). A higher ratio indicates that investors are willing to pay more for a company's shares relative to its book value, reflecting their belief in the company's potential for future profitability. With the acquisition of Credit Suisse, the combined bank's total equity increased, bringing the ratio below 100%. The bank's share price has outperformed its international peers since August 2023, when the bank announced the voluntary termination of the public liquidity backstop (PLB) and of the loss protection agreement with the federal government as well as the full repayment of ELA+. Consequently, UBS's ratio of market capitalisation over total equity is again more than 100% and above the median of its US and European peers.

60 In addition to standalone ratings, which evaluate the intrinsic financial strength of a bank, the agencies issue long-term credit ratings, which explicitly factor in the possibility of government support in a crisis ('government support uplift'). At holding company level, the three major rating agencies removed this government support uplift a few years ago. At the operating company level, S&P and Fitch have also removed the government support uplift, while Moody's continues to assume that UBS – alongside most other G-SIBs in Europe and the US – benefits from a 'moderate probability of government support' resulting in a 1-notch rating uplift on its deposits and senior unsecured debt.

4.5 RECOVERY AND RESOLUTION

FINMA is responsible for measures to stabilise companies subject to financial market laws in the event of a crisis, for the emergency and resolution planning of supervised institutions, as well as for the execution of restructuring, liquidation and insolvency proceedings.⁶¹ Systemically important banks have to prepare a recovery plan describing what action they would take to stabilise themselves in a crisis through their own efforts. The plan must be approved by FINMA.⁶²

If recovery fails, the bank is resolved. For this scenario, FINMA produces a resolution plan for each systemically important bank.⁶³ The plan shows how the bank would be recapitalised, restructured or liquidated in the event of its application. In the case of UBS as a G-SIB, FINMA's primary resolution strategy is to resolve the institution at group level via a 'single point of entry' bail-in. This means that FINMA would intervene at the level of the group holding company and convert bail-in-able creditors' claims into equity, which would help to restore the bank's capital base.

In addition, systemically important banks must prepare an emergency plan demonstrating how they would maintain systemically important functions⁶⁴ for Switzerland if the bank was at risk of insolvency.⁶⁵ FINMA considers those plans as a secondary strategy if its primary resolution strategy were to fail or if the resolution measures were to prove not sufficient.⁶⁶

61 Cf. www.finma.ch/en/enforcement/recovery-and-resolution/.

62 Cf. art. 64 para. 1 Banking Ordinance.

63 Cf. art. 64 para. 2 Banking Ordinance.

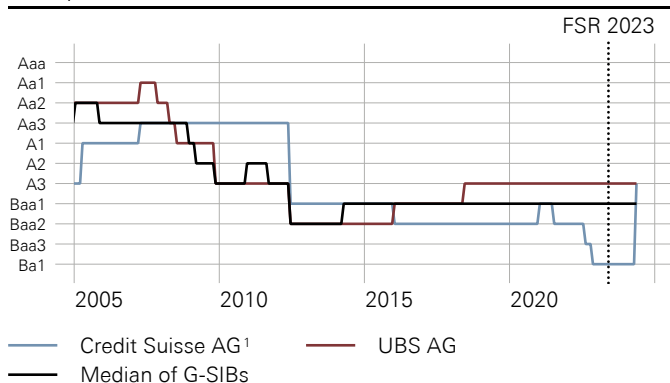
64 The systemically important functions comprise, in particular, domestic deposit and lending business as well as domestic payment transactions.

65 Cf. arts. 9–10 Banking Act and arts. 60–64 Banking Ordinance.

66 Cf. FINMA Resolution Report 2020, p. 30.

INTERNATIONAL COMPARISON OF BANK RATINGS

Moody's baseline credit assessment, standalone Chart 4.20

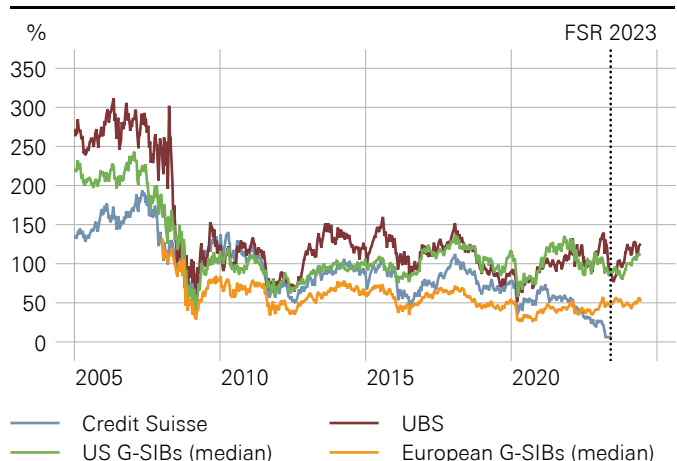


1 Moody's upgraded the rating of the Credit Suisse parent bank (Credit Suisse AG) to the level of the UBS parent bank on 7 May 2024 and withdrew the rating after the parent bank merger on 31 May 2024.

Source(s): Bloomberg, Moody's

MARKET CAPITALISATION OVER TOTAL EQUITY

G-SIBs Chart 4.21



Source(s): Bloomberg

4.5.1 RECOVERY PLANNING

In the recovery plan, the bank has to show what action it would take to stabilise itself sustainably in a crisis through its own efforts, i.e. without external support. The aim of activating the recovery plan is that the bank can continue its business without entering resolution. The bank's recovery plan must identify possible actions that could be taken in crisis scenarios and prepare for their implementation.

For systemically important banks, recovery measures may include liquidity-generating measures, a reduction in the balance sheet by allowing existing loans to expire or by selling assets or exiting business activities, as well as additional refinancing on the money and capital markets. Recovery measures can also include the recourse to liquidity support by central banks.

While non-systemically important banks are not required to prepare a recovery plan, they are required by the Liquidity Ordinance to prepare an emergency liquidity plan.⁶⁷

4.5.2 LESSONS LEARNT FROM THE CRISIS AT CREDIT SUISSE – RECOVERY PLANNING

Toolkit for early intervention needs to be strengthened

While Credit Suisse took measures to increase its liquidity in the context of the contingency funding plan, it did not activate its recovery plan, despite the formal conditions being met.⁶⁸ In particular, until March 2023, the bank refrained from taking additional measures to enhance its restructuring plan – such as selling off other parts of its business – although the credibility of that plan was increasingly being questioned by market participants.

The Credit Suisse experience shows that the recovery plan needs to consider that a wind-down of business activities can be very costly. UBS is now incurring significant losses from the winding down of Credit Suisse's legacy position due to operating expenses.⁶⁹ The performance of the non-legacy business activities of Credit Suisse (wealth management, asset management and investment banking) was weak and UBS expects it to remain subdued.

In its annual report, FINMA stated that it will put a stronger focus on ensuring that recovery measures can be implemented effectively, and that it will consider tightening up its approval practice.⁷⁰ Moreover, the Federal Council's report on banking stability identified a need for action in respect of early intervention and recovery, namely to strengthen early intervention options for the supervisory authority by legally enshrining the relevant measures, applicability and timing, and

67 Cf. art. 10 Liquidity Ordinance.

68 Cf. Federal Council report on banking stability, April 2024, p. 112.

69 The reported pre-tax loss in its non-core and legacy division amounted to USD 5 billion in 2023, mainly due to operating expenses. The bank plans to reduce the reported annual pre-tax losses in this division to approximately USD 1 billion by the end of 2026.

70 Cf. FINMA Annual Report 2023, p. 15.

to strengthen recovery planning through clearer regulatory requirements and criteria.⁷¹

4.5.3 RESOLUTION PLANNING

Gone-concern loss-absorbing capacity is a prerequisite for orderly resolution

As a prerequisite for the success of an orderly resolution, a bank needs an appropriate level of gone-concern loss-absorbing capacity in the event of impending insolvency. This capacity typically consists of specific debt instruments that can be converted into equity in a resolution ('bail-in bonds'), excess CET1 capital above the going concern requirement and, under specific conditions, cantonal/state guarantees and similar mechanisms.⁷²

All three DF-SIBs met the TBTF gone-concern requirements as at the end of 2023, in both a phase-in and look-through perspective. Gone-concern requirements for DF-SIBs entered into force in 2019 and are being phased in by 2026.⁷³

For G-SIBs, the Federal Council introduced gone-concern loss-absorbing capacity requirements at the consolidated group level in 2016 and at the legal entity level in 2020.⁷⁴ UBS meets the current requirements at all levels.

FINMA draws up resolution plans to restructure or liquidate banks in a crisis

For systemically important banks, FINMA produces a plan to restructure or liquidate the bank in its entirety ('resolution plan').⁷⁵ In the case of UBS, the plan covers the entire group, including foreign group entities. This is why this plan is also referred to as the 'global resolution plan'.

FINMA's primary resolution strategy for the globally active Swiss bank UBS is to restructure the entire bank via a 'single point of entry' bail-in.⁷⁶ This means that FINMA would intervene at the level of the group holding company and convert bail-in-able claims, usually 'bail-in bonds', into equity. This would help to restore the bank's capital base. If FINMA's primary resolution strategy were to fail or if the resolution measures were not sufficient, the bank's Swiss emergency plan would serve as a fallback for safeguarding systemically important functions in Switzerland.

71 Cf. Federal Council report on banking stability, April 2024, p. 27.

72 Excess Tier 1 capital not used to cover going-concern requirements may be used with preferential treatment for gone-concern purposes. As a result, depending on the amount of excess Tier 1 capital, the gone-concern risk-weighted and leverage ratio requirements are reduced by up to one-third of the requirement. To avoid double-counting, such capital has to be deducted from Tier 1 going-concern capital ratios. Explicit cantonal/state guarantees or similar mechanisms are eligible for covering up to half of gone-concern requirements – or even all of them, subject to additional conditions.

73 Cf. Capital Adequacy Ordinance.

74 Cf. Federal Council press release of 27 November 2019.

75 Cf. art. 64 para. 2 Banking Ordinance.

76 Cf. FINMA Resolution Report 2020, p. 20.

4.5.4 LESSONS LEARNT FROM THE CRISIS AT CREDIT SUISSE – RESOLUTION PLANNING

Remaining obstacles related to execution of resolution measures should be addressed

The instruments envisaged by the TBTF resolution framework were not applied to address the severe crisis faced by Credit Suisse in March 2023. The authorities came to the conclusion that, in this specific situation, the acquisition of Credit Suisse by UBS was best suited to achieving the goal of stabilising the market as quickly as possible and at the lowest possible risk for the state and taxpayers.⁷⁷ As highlighted in the Federal Council's dispatch, client confidence in Credit Suisse had been eroded to such an extent that it was uncertain whether the resolution measures would have restored market confidence.⁷⁸ Furthermore, the resolution of a G-SIB and a bail-in would have posed a massive risk of financial turmoil in the extremely fragile market environment of March 2023. Not only could this have jeopardised a successful resolution of Credit Suisse, but it could have increased the risk of contagion for other banks, thereby endangering financial stability in Switzerland and worldwide.

The Federal Council's report on banking stability highlights that it is important to address remaining uncertainties, risks and obstacles to resolution as effectively as possible, and in particular to increase the legal certainty surrounding bail-in.⁷⁹ In addition, the options available for resolution should be expanded and tailored to various crisis scenarios. This includes the clear enshrining of 'orderly wind-down' in law as a restructuring option.⁸⁰ Finally, the introduction of resolution plans for parent banks should be implemented for internationally active systemically important banks. This will close a major gap in ensuring the resolvability of the group as a whole.⁸¹

4.5.5 FUNDING IN RESOLUTION

Funding in resolution is a prerequisite for orderly resolution

A bank needs sufficient liquidity to implement the resolution strategy ('funding in resolution'), both at group level and at the level of the individual group entities. The resolution plan for large globally active banks prepared by FINMA includes a funding in resolution plan. This plan contains the measures to be taken in a resolution when there is a liquidity shortage. According to guidance provided by the Financial Stability Board (FSB), in developing the resolution funding plan, the home resolution authority should consider, among other elements, whether the assumptions and liquidity stress scenarios for the purposes of estimating liquidity resources and funding needs in resolution are appropriate. It should also consider the likely availability and size of private sources of funding,

and the key steps to mobilise such sources of funding.⁸² Moreover, the resolution funding plan should identify potential temporary public sector backstop mechanisms, including liquidity provided by central banks. The plan should identify the operational requirements, eligibility criteria and actions required to access the relevant funding mechanisms, and specify their maximum capacity.

Revised liquidity requirements apply for systemically important banks

The amendments to the Liquidity Ordinance entered into force on 1 July 2022. As of 1 January 2024, systemically important banks have to comply with the new requirements. They are intended to ensure that systemically important banks hold sufficient liquidity to cover their needs in times of liquidity stress and even in the event of a resolution.⁸³ The revised requirements address some, but not all, of the weaknesses that materialised during the crisis at Credit Suisse (for more details, cf. special topic in subchapter 5.1).

Federal Council adopted dispatch on implementation of PLB

To secure the liquidity of Credit Suisse and to ensure the successful implementation of the acquisition by UBS, the Federal Council decided on 19 March 2023 to activate a PLB on the basis of emergency law and to give the SNB a federal default guarantee for liquidity assistance loans.⁸⁴ The Federal Council had already announced, in March 2022, its intention to introduce a statutory PLB.⁸⁵ Such a PLB is intended to provide additional liquidity if the liquid assets of banks and their collateral for emergency liquidity assistance by the SNB⁸⁶ have been exhausted. According to the key parameters defined by the Federal Council, liquidity assistance for a systemically important bank would be provided by the SNB in the form of a state-guaranteed loan. The loan granted under the PLB would have privileged creditor status in bankruptcy in order to avoid potential losses for the Confederation. On 6 September 2023, the Federal Council adopted the dispatch on the introduction of a PLB for systemically important banks.⁸⁷ The bill is intended to transfer the March 2023 emergency provisions into ordinary law. The SNB was involved in developing the PLB concept and supports anchoring it in the Banking Act.

77 Cf. Federal Council report on banking stability, April 2024, p. 42.

78 Cf. Federal Council, 'Botschaft über den Nachtrag Ia zum Voranschlag 2023' (dispatch on addendum Ia to the 2023 budget) of 29 March 2023, pp. 17–18.

79 Cf. Federal Council report on banking stability, April 2024, p. 140.

80 Ibid.

81 Ibid.

82 Cf. FSB, Funding Strategy Elements of an Implementable Resolution Plan, 21 June 2018, p. 2.

83 Cf. Federal Department of Finance press release of 3 June 2022.

84 Cf. Federal Council press release of 19 March 2023.

85 Cf. Federal Council press release of 11 March 2022.

86 In its function as lender of last resort, the SNB can provide additional liquidity against sufficient collateral. Cf. SNB, 'Guidelines of the Swiss National Bank on monetary policy instruments' of 25 March 2004 (as at 5 May 2023).

87 Cf. Federal Department of Finance press release of 6 September 2023.

4.5.6 EMERGENCY PLANNING

Emergency plans must ensure that systemically important functions are safeguarded

Systemically important banks must prepare an emergency plan and demonstrate to FINMA that this plan ensures the continuation of systemically important functions in the event of imminent insolvency.

At the end of 2022, Raiffeisen Group's emergency plan met the requirements for the first time. In March 2024, FINMA also deemed ZKB's 2023 emergency plan ready to implement.⁸⁸ FINMA still considers PostFinance's emergency plan not yet ready to implement. PostFinance does not fulfil the emergency plan requirements regarding additional loss-absorbing funds. However, it has submitted a binding plan to build up these funds.⁸⁹

The review of the UBS emergency plan is still work in progress. As a consequence of the acquisition of Credit Suisse, UBS is in the process of revising its crisis preparedness. The bank will then submit its emergency plans to FINMA for review. FINMA will subsequently assess UBS's emergency plan and report on it.⁹⁰

4.5.7 LESSONS LEARNT FROM THE CRISIS AT CREDIT SUISSE – EMERGENCY PLANNING

Dependencies of Swiss entity on rest of group must be reduced

While the emergency plan did not have to be triggered in the crisis at Credit Suisse, it was considered as a possible measure. As highlighted by the Federal Council's report on banking stability, the insolvency of the group, which would have accompanied the triggering of the emergency plan, would probably have had a destabilising effect on global markets. It would also have been uncertain whether the separated Swiss entity would have been able to regain the confidence of the markets and survive in this situation.⁹¹

Another problem with triggering the emergency plan identified in the Federal Council's report relates to the assumption that the Swiss subsidiary will continue to operate after the emergency plan is triggered but that the parent bank will be declared bankrupt. Given the importance of the parent bank and its function as central treasury, a bankruptcy of the parent bank would have threatened financial stability in Switzerland and worldwide.⁹² As emphasised by the Federal Council's report, the introduction of resolution plans for parent banks of G-SIBs, like UBS, would close a major gap in ensuring the resolvability of the group as a whole.⁹³

⁸⁸ Cf. FINMA press release of 26 March 2024.

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ Cf. Federal Council report on banking stability, April 2024, p. 47.

⁹² Ibid, pp. 128–129.

⁹³ Ibid, p. 140.

This chapter contains five special topics. The first three present background information on some of the lessons learnt from the crisis at Credit Suisse. Subchapter 5.1 analyses banks' liquidity risk and funding structure. Subchapter 5.2 discusses liquidity support in a crisis. Subchapter 5.3 addresses conceptual issues in connection with the current capital regime of parent banks. It analyses the weaknesses of this regime and the Federal Council's proposed solution to remedy these weaknesses. The remaining special topics highlight developments that are particularly relevant for understanding recent developments in the banking sector. Subchapter 5.4 analyses the impact of the observed shift from negative to positive interest rates on banks' net interest income. Subchapter 5.5 discusses the growing importance of operational risk, in particular cyber risk, for financial stability.

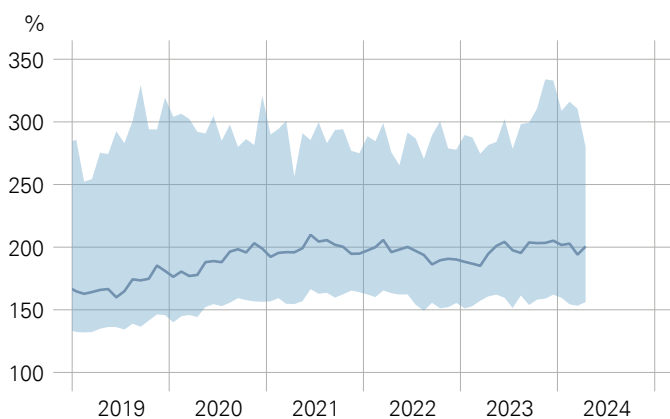
5.1 LIQUIDITY RISK AND FUNDING STRUCTURE: LESSONS LEARNT FROM THE CRISIS AND NEED FOR ACTION

Banks hold substantial liquidity in excess of regulatory requirements

The liquidity coverage ratio (LCR) requirement requires banks to hold high-quality liquid assets (HQLA) to allow them to survive a period of significant liquidity stress lasting 30 calendar days. Most banks in Switzerland hold substantial HQLA in excess of the LCR requirement. Their median LCR has averaged 200% over recent years – well above their regulatory minimum requirements

LIQUIDITY COVERAGE RATIOS¹

All banks Chart 5.1



¹ Median, 25% and 75% quantiles.

Source(s): SNB

(cf. chart 5.1).¹ HQLA vary significantly across banks, though. The banks in the highest quartile have an LCR of almost 300%, almost twice the value of banks in the lowest quartile (around 150%).

HQLA contribute to banks' resilience in the face of liquidity shocks. However, as the crises at Credit Suisse and US regional banks in March 2023 demonstrated, the speed and volume of liquidity outflows can become very high and lead to a rapid depletion of HQLA.

Recent banking crises have seen massive and rapid deposit outflows

In autumn 2022 and especially in spring 2023, massive and rapid deposit outflows at Credit Suisse and various US institutions underscored the vulnerability of banks operating with a high share of short-term funding. At Credit Suisse, outflows between October 2022 and March 2023 were approximately CHF 200 billion – more than half of the bank's customer deposits, or roughly 30% of its balance sheet total as at September 2022. These outflows were concentrated and rapid during certain phases. Almost half of the deposit outflows (approximately CHF 90 billion) occurred in October 2022. The fundamental cause was a serious loss of confidence in the bank resulting from a series of incidents and losses. The ultimate trigger was a social media post that mentioned significant problems at a major international investment bank, without actually naming Credit Suisse. In spring 2023, during the week starting 13 March, there was a major acceleration, with very large outflows recorded in the space of a few days.² Deposit outflows were even faster at various US banks in spring 2023, with Silicon Valley Bank and Signature Bank, for example, losing over 20% of their deposits in a single day.³

The high proportion of customer sight deposits at banks was one of the reasons why the deposits could be withdrawn quickly. Furthermore, technological innovation in payments and the electronic availability of deposits, as well as faster information flows (e.g. via social media), are also likely to have played an important role.

Outflows of retail deposits were larger than assumed in LCR regulation, especially for high-value deposits

The outflows of retail deposits observed during the crisis at Credit Suisse were significantly larger and occurred significantly faster than assumed by the LCR, especially for high-value retail deposits.⁴ As shown in table 4, the outflow rate of high-value retail deposits assumed by the

¹ Note that systemically important banks are subject to additional liquidity requirements above an LCR of 100% (cf. subchapter 4.5.7). Banks subject to the small banks regime face regulatory LCR requirements of 110% (cf. www.finma.ch/en/supervision/banks-and-securities-firms/kat-4-und-5-kleinbankenregime/). The remaining banks have regulatory LCR requirements of 100%.

² Cf. Swiss Financial Market Supervisory Authority (FINMA) report, Lessons Learned from the CS Crisis, 19 December 2023.

³ Cf. Board of Governors of the Federal Reserve System, Financial Stability Report, May 2023.

⁴ In Switzerland, high-value deposits refer to deposits from retail customers exceeding CHF 1.5 million (cf. annex 2 to the Liquidity Ordinance).

LCR is 20% over a 30-day period (LCR run-off). In practice, during the most acute phases in October 2022 and March 2023, these values were exceeded after just one week. The outflow rates for 30 days reached more than 40%, i.e. turned out to be more than twice as high as assumed in the LCR regulation.⁵ In March 2023, the outflows fell sharply following the intervention by the authorities and the announcement of the acquisition of Credit Suisse by UBS. If these measures had not been taken and observed outflow rates in the most acute phase had persisted for 30 days, more than 80% of high-value retail deposits would have been withdrawn.

Likewise, the outflows of non-high-value retail deposits, i.e. deposits from retail customers below CHF 1.5 million, were also larger than assumed in the LCR regulation, especially in March 2023. As shown in table 4, in March, the observed outflow rates of these deposits were about twice as high as assumed in the regulation.⁶

Overall, in October 2022, total outflows were approximately in line with the LCR regulation, as outflow rates in the wholesale segment were lower than assumed.⁷ However, in March 2023, observed outflow rates for total deposits were significantly higher than those assumed in the LCR regulation. Wholesale deposit outflows were approximately in line with LCR assumptions.

⁵ While the outflow rates for high-value retail deposits in the Swiss LCR are 20%, the Basel III standard requires a minimum of 10%.

⁶ Outflow rates for non-high-value retail deposits in the Swiss LCR are consistent with the Basel III standard.

⁷ Wholesale deposits include operational deposits with outflow rates of 25% as well as non-operational deposits from financials with rates of 100%, non-financials with 40% and small business customers with 10%.

High outflow potential of short-term retail deposits makes banking sector vulnerable

The banking sector is vulnerable to outflows of short-term retail deposits. This vulnerability is only partially reflected in the current LCR regulation. For instance, on average, for the systemically important banks in Switzerland, the outflow potential from retail deposits that could be withdrawn within 30 days based on contractual maturities is roughly ten times higher than the outflows assumed in the LCR. Hence, for retail deposits, the LCR regulation requires banks to hold HQLA that account for approximately 10% of their corresponding outflow potential.⁸ Given the very large size of the outflow potential, even relatively small deviations from the run-off rates assumed by the LCR can lead to substantial additional outflows compared to the required HQLA.

Further action is required with regard to LCR and liquidity regulation in general

The amended Swiss liquidity regulations for systemically important banks came into force in 2022, i.e. before the crisis at Credit Suisse, and are applicable as of 2024. The main aim of those amendments is to ensure that systemically important banks hold sufficient liquidity to cover their intraday requirements as well as their liquidity needs during a stress scenario lasting more than 30 days. Both of these aspects played a role in the crisis at Credit Suisse and are now covered by the amended requirements.

To address other aspects of the crisis that have not yet been covered, for instance the higher-than-assumed outflow rates of high-value retail deposits, the SNB supports a

⁸ In addition to the LCR requirement, systemically important banks in Switzerland must meet further liquidity requirements. These requirements cover other risks not captured by the LCR, such as intraday liquidity needs or outflows of deposits with a remaining maturity of more than 30 days.

DEPOSIT OUTFLOWS AT CREDIT SUISSE, COMPARED TO LCR RUN-OFF RATES

Table 4

	October 2022			LCR run-off	March 2023		
	LCR run-off ¹	1 week	30 days		1 day	1 week	30 days
Retail deposits ²	-12%	-12%	-24%	-12%	-4%	-18%	-24%
Of which non-high-value	-10%	-8%	-14%	-10%	-2%	-13%	-18%
Of which high-value ³	-20%	-22%	-44%	-20%	-7%	-33%	-41%
Wholesale deposits ⁴	-40%	-23%	-37%	-39%	-11%	-32%	-40%
Total deposits	-28%	-18%	-31%	-25%	-7%	-25%	-32%

¹ LCR run-off rates are volume-weighted averages of the respective categories. The different run-off rates in October and March are due to differing volumes.

² Outflows are expressed as a percentage of deposits with a maturity of less than 30 days.

³ High-value refers to retail deposits over CHF 1.5 million, for which a run-off rate of 20% is assumed under the Swiss LCR.

⁴ LCR run-off rates for wholesale deposits are weighted averages of outflow rates for non-operational and operational deposits from financials, non-financials and small business customers, excluding unsecured debt issuances.

Source(s): Bank data, SNB calculations

review of the LCR at international level. At national level, a review of the effectiveness of the special liquidity requirements for systemically important banks will be concluded by the end of 2026.⁹

Making adjustments in light of the experience from the recent crisis could, for instance, ensure the adequate backing of large retail deposits with HQLA, especially in the case of systemically important banks and banks whose funding structure depends heavily on the short-term deposits of large retail customers. This would simultaneously strengthen the incentives for banks to channel short-term customer deposits into longer-term types of funding, e.g. by offering higher interest rates for term deposits. The incentive effect stems from the fact that, unlike short-term funding, longer-term types of funding do not have to be backed by HQLA.

A stable funding structure makes the banking sector more robust. It gives banks and authorities more time to implement the measures necessary to address the causes of a loss of confidence, especially in a recovery or resolution. Moreover, as a source of relatively cheap funding, deposits are the cornerstone of most banks' franchises. When a bank has lost the majority of its deposits, the chance of a successful recovery or resolution are much lower.

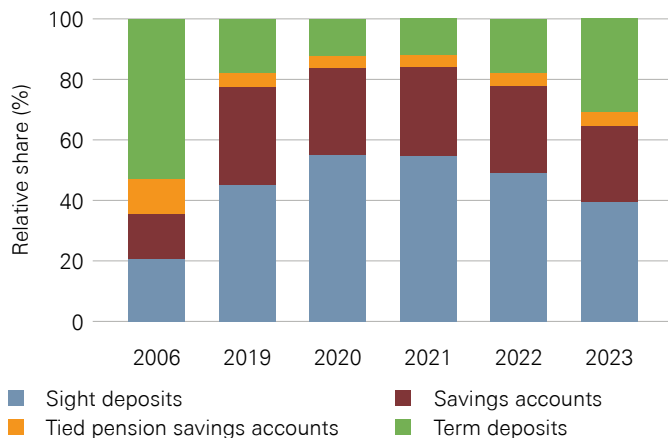
Banks can perform their tasks and remain competitive with a more stable funding structure

Banks can continue to engage in maturity transformation, even with a longer-term funding structure. While term deposits currently account for only a small proportion of deposits at Swiss banks, this share was significantly higher before the 2008 financial crisis. The opposite is true for sight deposits, which today make up the largest share of customer deposits (cf. chart 5.2, which illustrates this

9 Cf. Federal Council report on banking stability, April 2024.

DEPOSIT STRUCTURE

Credit Suisse, Raiffeisen Group, UBS and ZKB Chart 5.2



Source(s): SNB

using Credit Suisse, Raiffeisen Group, UBS and ZKB; PostFinance is excluded from the comparison as no data are available for 2006).

The long phase of very low, or even negative, interest rates has contributed to the steep rise in sight deposits since the 2008 financial crisis. This share has fallen again somewhat since the normalisation of interest rates, underlining the fact that the ratios of sight deposits and term deposits have always fluctuated and that these fluctuations are mainly driven by the interest rate level.

Finally, a current cross-section of banks also shows that there are institutions with relatively low proportions of sight deposits that are capable of remaining competitive. The share of sight deposits in total deposits at banks in the lowest quartile is 20–30%.

5.2 LIQUIDITY SUPPORT IN A CRISIS: THE ROLE OF LIQUIDITY ASSISTANCE AND THE PUBLIC LIQUIDITY BACKSTOP

The SNB accepts broad range of collateral

Liquidity assistance provided by central banks against collateral serves as the second line of defence when banks' own liquidity sources are insufficient. Under the National Bank Act, the SNB must demand sufficient collateral from a bank when providing liquidity assistance. This important principle has long been established in international practice and it ensures that the SNB's support is limited to liquidity assistance and does not become solvency support. Liquidity assistance would result in solvency support if the SNB granted an uncollateralised loan and the borrowing bank was not able to repay it. The granting of uncollateralised loans and thus the decision whether to support a bank with public funds and at taxpayers' risk must be taken by government and parliament. This is why the SNB is not permitted to provide a bank with unlimited and/or unsecured financial assistance. Furthermore, the SNB has no legal basis for guaranteeing deposits or recapitalising, acquiring or resolving banks.

For liquidity assistance, the SNB accepts a broad range of collateral, which is determined in dialogue with the banks and reviewed by the SNB on an ongoing basis. The focus of the framework for liquidity assistance is on illiquid assets, which the banks are unable to use at short notice to generate liquidity in a crisis.¹⁰ These primarily comprise non-securitised mortgages to private individuals and companies which, for systemically important banks in Switzerland, constitute around 85–95% of a bank's domestic lending volume to non-financial customers. Systemically important banks can also use various securities as collateral. Through securitisation, loans to foreign clients – such as Lombard loans, which make up a large share of big banks' portfolios – can likewise be used as

10 For more details regarding the collateral framework for emergency liquidity assistance, cf. SNB Annual Report 2023, p. 109.

collateral. The collateral the SNB accepts and the risk-based haircuts it applies are comparable to those of other central banks. Globally active banks such as UBS also have the opportunity to post foreign collateral directly at liquidity facilities of foreign central banks.

Preparations by banks are decisive factor for usability of assets as collateral

A decisive factor for the usability of assets as collateral is that the banks have made the necessary preparations to ensure effective transferability to the SNB. This particularly concerns legal aspects such as the amendment of transfer clauses in the loan contracts and, in the case of loans to foreign clients, securitisation. A prerequisite for illiquid assets to be used as collateral in obtaining liquidity assistance is that a pledge or assignment as security can be established. Otherwise, should the loan not be repaid, the SNB would be unable to realise the collateral.

In the case of Credit Suisse, it was not the range of collateral accepted by the SNB and other central banks that limited the provision of liquidity assistance. Rather, the preparations made by Credit Suisse were not sufficient to ensure a valid and legally enforceable delivery of collateral. Therefore, the full potential for liquidity assistance from the SNB could not be exploited. Moreover, a substantial proportion of eligible assets was already encumbered, or committed in other financial transactions of the bank, and therefore not deployable for liquidity assistance from the SNB. During the crisis, Credit Suisse did not identify any further material items that could establish a valid and legally enforceable security interest in favour of the SNB and therefore be used to expand the scope for emergency liquidity assistance.

Going forward, banks should be required to prepare a certain volume of collateral for the purpose of obtaining liquidity assistance from central banks, as also proposed in the Federal Council's report on banking stability.¹¹

The SNB launched initiative to expand liquidity support to the banking sector

Banks of all sizes can find themselves in a situation where they quickly need significant amounts of liquidity despite having precautions in place that comply with regulations. With its 'Liquidity against Mortgage Collateral' (LAMC) initiative, the SNB has created the prerequisites for the entire banking sector to obtain liquidity assistance against mortgages. This liquidity assistance was already available to systemically important banks. In the LAMC process, mortgage collateral is transferred digitally and in a standardised format.

The aim of the LAMC initiative is to ensure that the SNB can provide liquidity against mortgage collateral to all banks in Switzerland that have made the requisite preparations, should the need arise. The SNB started

preparatory work for this expansion in 2019. Implementation began in 2022 with two pilot banks. The SNB expects banks involved in mortgage lending to take part in the initiative. Since the presentation of the initiative to the banking sector in autumn 2023, a considerable number of banks have communicated to the SNB their willingness to participate in the initiative, and preparations with several banks are already underway.

PLB would allow additional liquidity support

In a resolution, liquidity needs can be particularly high. Even with better preparation of collateral, there may be circumstances when the liquid assets of the banks and their collateral for the emergency liquidity assistance by the central bank may not be sufficient. In such cases, a PLB serves as a third line of defence and allows the SNB to provide systemically important banks with additional liquidity as part of a restructuring of the affected bank. The repayment of the liquidity is guaranteed by the government. The Federal Council activated the PLB on the basis of emergency law to ensure the successful implementation of the acquisition of Credit Suisse by UBS. The PLB is now to be transferred into ordinary law.¹²

A PLB is associated with potentially high costs for both the federal budget and the SNB. The state guarantee and the risk premium, as provided for in the dispatch on the introduction of a PLB,¹³ reduce the financial risks for the SNB. However, there may be a very long time period between the potential opening of bankruptcy proceedings and the date from which the state guarantee applies. The SNB incurs risks since it does not receive any interest payments after the opening of bankruptcy proceedings and will only recover the loan at the end of the proceedings.

Given the potentially high risk of a PLB for the SNB, the state and the taxpayers, it is important to reduce both the probability of a systemically important bank needing a PLB and its potential volume. The latter depends on a number of factors which include the structure of the bank's assets and liabilities, the quality of its risk management and the level of crisis preparedness. The probability of a bank needing a PLB with a high volume is greatest if its liquidity need is particularly high relative to its balance sheet. Important factors to avoid or limit the use of the PLB include a more stable funding structure, more liquid assets and a larger pool of unencumbered collateral that can be transferred without delay for obtaining liquidity assistance from central banks.

The SNB was involved in developing the PLB concept and supports anchoring it in the Banking Act. It also supports measures strengthening the first two lines of defence to reduce the probability of a bank needing a PLB. These measures concern, in particular, a strengthening of the stability of the banks' funding structure and a requirement

¹¹ Cf. Federal Council report on banking stability, April 2024, p. 27.

¹² Cf. Federal Council dispatch of 6 September 2023 (www.admin.ch/gov/en/start/documentation/media-releases.msg-id-97631.html).
¹³ Ibid.

to prepare a higher volume of eligible collateral for obtaining liquidity assistance.

5.3 CAPITAL REGIME OF PARENT BANKS: WEAKNESSES OBSERVED DURING THE CRISIS AND REMEDY

The crisis at Credit Suisse has shown that under the current regulatory regime, the capital situation of the Credit Suisse parent bank¹⁴ was highly vulnerable. Within one year, the Common Equity Tier 1 (CET1) capital ratio of the parent bank dropped from 13.4% to a low of 9.7% in Q3 2022. This substantial decrease in the regulatory capital ratio was primarily driven by impairments of the parent bank's participations in foreign subsidiaries, which lost approximately 60% of their value during this period due to lower expected profits (cf. chart 4.10 in subchapter 4.1.3). Under the fully applied capital regime applicable as of 2028, the capital ratio would have dropped significantly lower.

The capital erosion produced a vicious circle. Restructuring measures that were desirable to restore the profitability and the capitalisation of the group had the immediate effect of further reducing the value of the participations in the US and UK – and therefore the capitalisation of the parent bank. This misalignment of objectives is due to the estimated future profits of subsidiaries, which determine the book value of the participations at the standalone parent bank level. At consolidated group level, however, the book value of participations cancels out and therefore has no impact on the capital situation. A strategic change to completely exit Credit Suisse's investment banking businesses would have led to a substantial impairment of the parent bank's foreign participations, as the estimated future profits from these businesses would have dropped significantly. This mechanism limited the room for manoeuvre and affected the stringency and credibility of the restructuring plan.¹⁵ Consequently, the bank was downgraded by rating agencies and confronted with even tighter financial constraints, which further reduced its profitability outlook.

Treatment of participations is not sufficiently robust in current capital regime for parent banks

The high risk of participations in financial subsidiaries, as illustrated by the crisis at Credit Suisse, results from the leverage involved in these positions. Since a participation is the most junior claim on the assets of a wholly owned subsidiary, the parent bank must absorb all financial and operational losses of that subsidiary. As a result, a participation can rapidly and massively depreciate when the financial prospects of the subsidiary deteriorate,

¹⁴ The Credit Suisse parent bank refers to Credit Suisse AG as a standalone operating bank.

¹⁵ If, for example, as part of its strategic reorientation in October 2022, Credit Suisse had completely exited the securitisation business in its investment bank, this would have led to further impairments on its foreign participations. Credit Suisse therefore had to strike a balance between the quicker implementation of the strategy and the capitalisation of the parent bank.

e.g. when a crisis situation requires a restructuring or a business exit.

The capital backing of the participation has to adequately reflect the high risk of this exposure type. A participation in a financial subsidiary relates to the capital that the parent bank has granted to this subsidiary.¹⁶ If the parent bank is not required to fully back such a participation with regulatory capital, it can partially finance a capital increase at a subsidiary by issuing debt. This practice, which is referred to as 'double leverage', leads to an overestimation of the parent bank's resilience as measured by regulatory capital ratios.

Under the current Swiss capital regime for parent banks, participations are not sufficiently backed by capital. Higher risk weights for participations are currently being phased in until the beginning of 2028. Once fully applied, the risk-based 'too big to fail' (TBTf) capital framework will require the UBS parent bank to back its foreign subsidiaries with approximately 50% CET1 capital and its Swiss subsidiaries with approximately 30%.¹⁷ Consequently, the fully applied capital regime will reduce but not eliminate double leverage at parent banks.

Before the crisis, the issue of partially backed participations was acute at Credit Suisse. In 2020, the total value of Swiss and foreign participations at the Credit Suisse parent bank substantially exceeded the regulatory capital of the consolidated group. The capital regime applicable at the time required CET1 capital backing of these participations of only around 25% on average.¹⁸

While the issue of partially backed participations at the UBS parent bank is less pronounced than it was at Credit Suisse before the crisis, it remains material. The total amount of Swiss and foreign participations at the UBS parent banks as at Q1 2024 was about as large as the regulatory capital of the consolidated group. The fully applied capital regime will require a CET1 capital backing of these participations of approximately 40% on average.¹⁹

Compared to foreign peers, a prudent capital regulation at the parent bank standalone level is particularly important for UBS for two reasons. First, the UBS parent bank is at the same time a holding company for the Swiss and

¹⁶ In practice, the asset value of the participation on the parent bank's balance sheet can deviate significantly from the amount of eligible regulatory capital in the subsidiary due to different calculation or valuation methods.

¹⁷ By end-2028, the regulatory risk weights for foreign and Swiss participations will increase to 400% and 250%, respectively. Also, by 2030 at the latest, UBS needs to meet its higher TBTf CET1 capital requirements, which amount to 11.8% based on its current size and market share. In combination, this requires a CET1 capital backing of approximately 50% and 30% for foreign and Swiss participations, respectively. The Tier 1 capital requirement amounts to 16.1% based on UBS's current size and market share. In terms of Tier 1 capital, the required capital backing of foreign and Swiss participations will be approximately 60% and 40%, respectively.

¹⁸ In terms of Tier 1, the required average capital backing of these participations was 35%.

¹⁹ In terms of Tier 1, the required average capital backing of these participations will be approximately 55%.

foreign banking subsidiaries and an operating bank entity with substantial own banking activities, including client deposits. This is different from other jurisdictions (e.g. the US or UK), which are more restrictive in this regard.²⁰ Second, while some European peers also have an operating parent bank, a peer comparison based on accounting data shows that participations are particularly significant at UBS. For a detailed international peer comparison regarding the regulatory capital treatment of parent banks, the banks' regulatory disclosures do not provide sufficient information.

Moreover, in the current regime, the leverage ratio requirement cannot effectively measure and limit leverage at the parent bank and play its role as a backstop to the risk-weighted capital requirement. By construction, the leverage ratio requires the same amount of capital for all asset categories, including participations. In the TBTF leverage ratio framework, the CET1 capital required is approximately 4% of the exposure value, independent of the asset's risk. At the parent bank level, backing only 4% of participations with capital leaves substantial room for double leverage. This explains the very high leverage ratio disclosed by the parent banks under the current capital regime. The average of the CET1 leverage ratios at the UBS parent banks as at Q1 2024 was about twice as high as the corresponding leverage ratio of the consolidated group, which was 4.9% as at Q1 2024.

Due to this inadequate measurement of economic leverage at the parent bank, the leverage ratio requirement cannot ensure that risk-based capital requirements do not fall below prudent levels. In the current regime, risk-based capital requirements for the UBS parent bank's own business activities could fall almost to zero and the leverage ratio would still not be a binding constraint.

Federal Council aims for significant increase in capital backing of foreign subsidiaries

Given the crisis experience at Credit Suisse, the Federal Council proposes that capital requirements for parent banks should be increased in a targeted way. It is aiming for a significant increase in the capital backing of foreign subsidiaries. As pointed out by the Federal Council, this not only increases the parent bank's capitalisation, but also reduces the incentives to set up complex corporate structures and improves the likelihood of the bank being successfully restructured. FINMA also called for a stricter capital regime for parent banks in its report on lessons learnt from the crisis at Credit Suisse.²¹

20 Cf. Federal Council report on banking stability, April 2024.

21 Cf. FINMA Report, Lessons Learned from the CS Crisis, 19 December 2023.

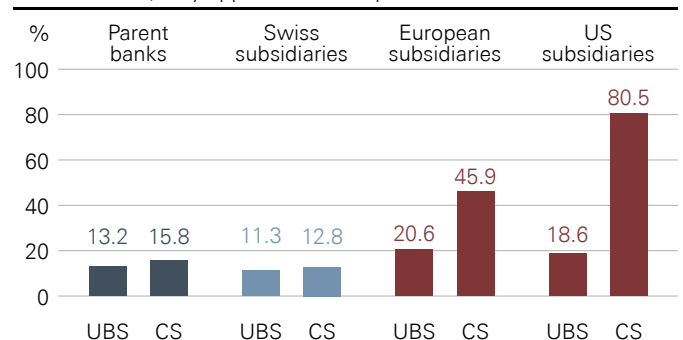
The SNB concurs with the Federal Council and FINMA that a strengthening of the Swiss capital regime for parent banks is necessary. A full backing of foreign participations with regulatory capital would restrict double leverage within UBS. Moreover, the capitalisation of the parent bank would no longer depend on the valuation of its foreign participations. A holistic monitoring of the risks and side effects of double leverage would still be important, as the use of double leverage remains possible between the group and the parent bank as well as between the parent bank and its Swiss subsidiaries.

To some extent, UBS can achieve a strengthening of its parent bank's capitalisation through a more balanced distribution of regulatory capital within the group. Chart 5.3 shows that in Q1 2024, the capital ratios of the parent banks' foreign subsidiaries were significantly higher than the corresponding ratios of the parent banks' Swiss subsidiaries and the parent banks themselves, both for UBS and Credit Suisse. To some extent, these differences are due to higher capital requirements at the foreign subsidiaries. In the US, capital requirements are determined based on a regulatory stress test.²² In Q1 2024, however, capital ratios were extraordinarily high at the two foreign Credit Suisse subsidiaries due to the ongoing risk reduction processes and the planned integration of the legal structure. Before the crisis, in Q2 2022, the capital ratios of these two subsidiaries were 24%, which was still high compared to the Swiss subsidiaries but much lower than in Q1 2024.²³

22 UBS Americas Holding LLC consolidated, for example, is subject to a CET1 capital requirement of 13.6%, which is considerably higher than the corresponding requirement of 10% for UBS under the Swiss TBTF regulations.
23 The UK subsidiary, Credit Suisse International, and the US intermediate holding company, Credit Suisse Holdings (USA), Inc., collectively hold USD 21 billion of CET1 capital as at Q1 2024. UBS completed the transition to a single US intermediate holding company on 7 June 2024.

CET1 CAPITAL RATIOS OF THE UBS PARENT BANKS AND SIGNIFICANT SUBSIDIARIES¹

As at Q1 2024, fully applied ratios for parent banks Chart 5.3



1 From left to right: UBS AG standalone, Credit Suisse AG standalone, UBS Switzerland AG standalone, Credit Suisse (Schweiz) AG standalone, UBS Europe SE consolidated, Credit Suisse International standalone, UBS Americas Holding LLC consolidated, Credit Suisse Holdings (USA), Inc. consolidated.

Source(s): UBS's Q1 2024 Pillar 3 report

Deduction of participations achieves robust capital treatment, for both risk-weighted and leverage ratio requirements

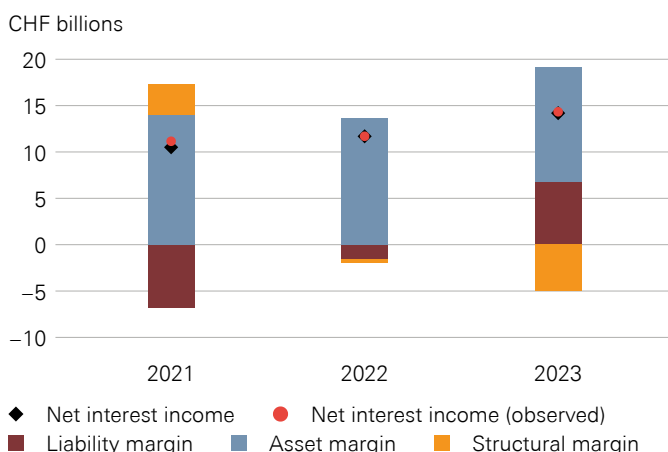
In the risk-weighted framework, a higher backing of participations can be achieved by either increasing the risk weights or by deducting participations from a parent bank's eligible capital. For the leverage ratio, a deduction approach is necessary to restore its function as a capital backstop, because the higher risk weights for participations have no effect on the leverage ratio requirement.

A deduction approach for participations would also reduce the complexity of parent banks' capital requirements. For both the risk-weighted capital ratio and the leverage ratio, participations would simply be deducted from capital (the numerator) and removed from the exposure (the denominator). Moreover, a deduction approach achieves an adequate capital backing with the right capital quality and is independent of bank-specific capital requirements.²⁴

24 The following illustrates the complexity of the risk-weighting approach in contrast to the deduction approach. Due to the progressive component of the TBTF capital regime, the risk-weighted CET1 capital requirements of Swiss systemically important banks range from 8.56% to 11.80%. A full capital backing with CET1 capital would imply risk weights ranging from 1,170% (=1/0.0856) to 850%. In this case, however, the capital backing in terms of Tier 1 capital would exceed 100%, as Tier 1 capital requirements are higher than CET1 capital requirements and range from 12.9% to 16.1%. Requiring full backing with Tier 1 capital would imply risk weights ranging from 780% to 620%. In contrast, a deduction approach is much simpler and treats the different types of participations adequately. Participations that relate to CET1 capital instruments are deducted from CET1 capital, and participations that relate to Additional Tier 1 (AT1) capital instruments are deducted from Tier 1 capital. Furthermore, participations are removed from the risk-weighted assets (RWA) and leverage ratio exposure.

NET INTEREST INCOME BREAKDOWN

DFBs – observed and simulated values Chart 5.4



Source(s): SNB

5.4 INTEREST RATE RISK MEASUREMENT: IMPACT ON BANKS OF SHIFT FROM NEGATIVE TO POSITIVE INTEREST RATES

This subchapter analyses the impact of the 2022/2023 increase in interest rates on net interest income at domestically focused banks (DFBs). It explains why, with a negative interest rate environment as a starting point, net interest income can increase despite banks' large exposure to interest rate risk. The analysis also shows that, with a positive interest rate environment as a starting point, a further sudden interest rate increase would have a negative impact on banks' net interest income.

A bank's interest margin – or its net interest income – consists of three components: the asset margin, the liability margin, and the structural margin (margin from maturity transformation).²⁵ The size and direction of an interest rate shock will affect the three components in different ways. The earnings approach, which complements the net present value (NPV) approach covered in subchapter 4.2.3, enables the measurement of the impact of interest rate movements on the three margin components.²⁶ Chart 5.4 highlights the back-test results for the period 2021 to 2023 using this approach. It also shows the development of these three components (stacked bars) and compares observed and simulated net interest income values (red dots and black diamonds).²⁷

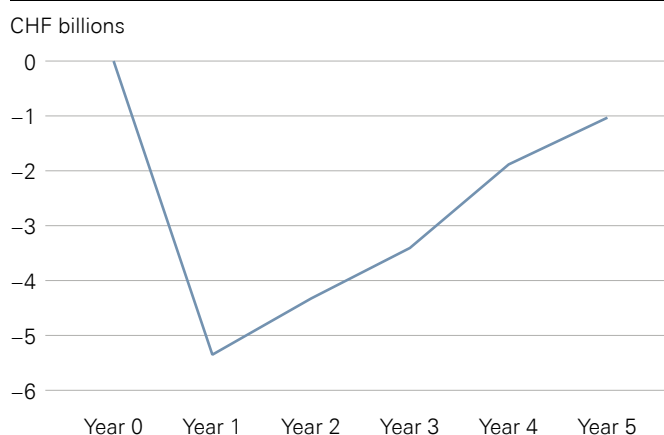
25 The asset margin is the difference between the interest on the asset and on the alternative asset with the same maturity on the capital market. The liability margin is the difference between alternative funding costs for the same maturity on the capital market and the interest paid on the liability. The structural margin from maturity transformation is the difference between the interest rate on an alternative investment on the capital market with the same maturity as the asset and alternative funding costs on the capital market for the same maturity as the liability.

26 For the detailed description of the two approaches used at the SNB, please refer to the interest rate box in the SNB Financial Stability Report 2016 (pp. 26–30). The earnings approach is also used for scenario analysis purposes (cf. subchapter 4.3).

27 The back-test of the earnings approach simulations has used observed macroeconomic variables since 2021 and uses balance sheet exposures measured at end-2021.

NET INTEREST INCOME SIMULATION

DFBs – effect of a 200 bp parallel interest rate increase Chart 5.5



Source(s): SNB

Positive effects from recent interest rate increase have dominated, in line with expectations

The 2022/2023 interest rate increase, which followed an extended period of negative interest rates in Switzerland, has had a positive effect on net interest income. First, the market interest rate pass-through to deposit interest rates has remained muted. This enabled banks to restore their liability margins (cf. chart 5.4). During the low/negative interest rate environment, the zero lower bound on customer deposits resulted in banks' liability margins being increasingly compressed, eventually turning negative (cf. chart 5.4, breakdown for 2021). As market interest rates turned positive, the mechanism reversed and banks gradually restored their liability margins. Second, the Swiss franc swap curve movements were beneficial for interest income. Long-term interest rates (e.g. five or ten-year) increased substantially compared to levels observed in 2021. In combination with relatively stable asset margins, new and renewing mortgages were priced at higher interest rates (swap rate plus bank asset margins), gradually leading to higher interest income. In addition, and unlike in previous hiking cycles, interest income also rose due to the SNB paying interest on banks' sight deposits. Finally, these positive effects offset the negative effect from the structural margin, which is a direct result of maturity transformation in an environment of increasing interest rates.

Overall, the effect of the 2022/2023 interest rate rise in Switzerland on net interest income of DFBs is consistent with expectations (cf., for example, SNB Financial Stability Report 2022, p. 37). As can be seen, the observed net interest income levels are in line with the simulated net interest income levels from the back-tested earnings approach (cf. chart 5.4, red dots and black diamonds). Deviations between observed and simulated values reflect differences between observed and modelled behaviours (e.g. migration to term deposits). Moreover, while aggregate observed and simulated levels are close to each other, deviations at the individual bank level are more material.

Further interest rate increase would have negative impact on DFBs' net interest income

With a positive interest rate environment as a starting point, a further sudden increase in interest rates would reduce net interest income at DFBs (cf. chart 5.5). Given the extensive maturity transformation currently in DFBs' banking books, a 200 basis point parallel interest rate increase would lead to the materialisation of interest rate risk, as interest expenses would rise more than interest income. As a result, the decrease in the structural margins would offset the benefits from the improving liability margins.

5.5 OPERATIONAL RISK: A GROWING CONCERN FOR FINANCIAL STABILITY

Operational risk is becoming an ever greater concern for financial stability. This development reflects the banks' growing exposure to cyber risk and the increased outsourcing of important functions from banks to third-party providers.

Banks' exposure to cyber risk is rising

The number of cyberincidents worldwide has increased sharply over the past two decades, and especially since 2020.²⁸ The financial sector is particularly exposed to cyber risk. Financial institutions have increasingly digitalised their products and processes, and they handle extensive amounts of customer data. They perform large volumes of transactions at a high frequency and are strongly dependent on the confidence of customers and counterparties. Some banks have reported significant losses, particularly in the US.²⁹ In Switzerland, supervised financial institutions have reported between 50 and 80 major cyberattacks on their critical functions per year since 2020.³⁰ While the number of attacks on smaller institutions has increased, systemically important institutions remain disproportionately exposed.

In Switzerland, as in many jurisdictions, cyber risk has materialised recently in the form of distributed denial-of-service and malware attacks and unauthorised access to the IT systems of financial institutions. Cyberincidents can be aggravated by governance deficiencies, which reveals a lack of robustness of a financial institution's own processes.³¹ The costs of successful cyberincidents have remained limited so far, but the impact could increase as the number and sophistication of cyberattacks rise. Moreover, the indirect costs of protecting against cyberattacks and their effects are already very high and rising.

A cyberattack can severely impair the operational capability of a bank, an insurance company, or a financial market infrastructure (FMI) and possibly spill over across the financial system. Systemic risk can result from the high level of interconnectedness in the financial system, banking concentration in the provision of payment and custody services, and the reliance on a small number of critical service providers. Possible consequences include a loss of confidence, liquidity problems, financial losses or the inability of systemically important banks and infrastructures to perform their critical functions for the economy and the financial system.

28 IMF, Global Financial Stability Report, April 2024, p. 77.

29 Ibid, and European Central Bank (ECB), Financial Stability Review, May 2023.

30 FINMA Risk Monitor 2023.

31 FINMA Annual Report 2023.

Operational risk also driven by outsourcing of functions to third-party providers

The increased outsourcing of important functions from banks to third-party providers constitutes another driver of operational risk developments in recent years. For certain functions such as cloud services, numerous financial institutions outsource to a small number of service providers. A service disruption, e.g. resulting from a successful cyberattack on a single service provider, can therefore have a significant effect on many financial institutions, limiting the capacity of the financial sector as a whole to fulfil its function. Furthermore, since some critical service providers are non-financial institutions, they may not come under the regulatory perimeter.

Financial institutions are responsible for protecting themselves against operational risk – regulation and supervision contribute to resilience

The responsibility for adequately protecting themselves against operational and, in particular, cyber risk lies primarily with the financial institutions. This implies, among other things, that financial institutions remain responsible for the continuity of services and critical processes even when these are outsourced. However, given the interdependencies in the financial system, operational and cyber resilience create externalities. Financial institutions may underinvest in order to save on the very high costs of cybersecurity.³² Regulation and supervision are therefore necessary contributors to operational and cyber resilience.

The SNB is responsible for overseeing systemically important FMIs. In the area of operational and cyber risk, the SNB has mandated FMIs to improve their ability to resume their critical business processes in the event of extreme but plausible scenarios. Such extreme scenarios include, for example, a partial or total loss of data at all data centres or severely compromised data integrity. FMIs are implementing a number of measures such as ransomware-proof data storage and the building of isolated infrastructures for system recovery. Further efforts are necessary to improve recovery capabilities – also in terms of timeliness – to protect against a broader scope of extreme threats. Cyber risk and third-party risk are also taken into consideration in the revision of the Financial Market Infrastructure Act. With regard to third-party risk, the SNB expects to be granted the right to conduct audits at service providers when a systemically important FMI outsources a critical part of its processes.

FINMA supervises individual financial institutions and thereby assesses the adequacy of their operational and cyber risk management. In December 2022, FINMA issued a revised circular on the management of operational and cyber risks.³³ It conducts on-site cyber-risk reviews in addition to the regular audits carried out by audit firms. In this context, FINMA has identified deficiencies in the area of risk governance, especially the absence of cyber-risk scenarios in business continuity management systems, shortcomings in data loss protection, and inadequately implemented or untested backup or recovery plans. In the area of outsourcing, FINMA has found that attacks on service providers have an above-average success rate. Financial institutions often fail to define clear cybersecurity requirements for their service providers or they insufficiently monitor compliance with these requirements. As a result, service providers may fail to respond to cyberincidents with sufficient speed and effectiveness, thereby compromising the recovery at financial institutions themselves. Moreover, some financial institutions lack a complete inventory of their service providers.³⁴

Finally, together with the federal government, the SNB is a member of the Swiss Financial Sector Cyber Security Centre (Swiss FS-CSC), founded in 2022, while FINMA is an affiliate. This association promotes cooperation between financial institutions and authorities with the goal of strengthening the financial sector's cybersecurity. One key role of the Swiss FS-CSC is to take a systemwide perspective with regard to the identification of threats, the recommendation of prevention measures and the coordination of remedial actions. For this purpose, the SNB contributes to the design of crisis simulations and participates in such exercises. Going forward, a better mapping of financial and technological interconnections, within the Swiss financial sector but also globally, will be essential. Another important goal will be the identification of critical non-financial infrastructure or service providers that currently do not come under the regulatory perimeter, including the definition of an appropriate supervisory treatment for them.

³² Bank of England, 2024, 'The FPC's macroprudential approach to operational resilience', p. 12.

³³ FINMA Circular 2023/1 'Operational risks and resilience – banks'.

³⁴ FINMA Annual Report 2023.

Abbreviations

AT1	Additional Tier 1
Basel III	International regulatory framework for banks developed by the BCBS
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
CCyB	Countercyclical capital buffer
CDS	Credit default swap
CET1	Common Equity Tier 1
CS	Credit Suisse
DFB	Domestically focused bank
DF-SIB	Domestically focused systemically important bank
ECB	European Central Bank
FINMA	Swiss Financial Market Supervisory Authority
FMI	Financial market infrastructure
FSB	Financial Stability Board
FSR	SNB Financial Stability Report
FX	Foreign exchange
GDP	Gross domestic product
GEAK	Cantonal energy certificate for buildings
G-SIB	Global systemically important bank
HQLA	High-quality liquid assets
IMF	International Monetary Fund
LAMC	Liquidity against mortgage collateral
LCR	Liquidity coverage ratio
LTI	Loan-to-income
LTV	Loan-to-value
NBFI	Non-bank financial institution
NGFS	Network for Greening the Financial System
NPV	Net present value
OECD	Organisation for Economic Co-operation and Development
PLB	Public liquidity backstop
PVA	Prudent valuation adjustment
RBD	Federal Register of Buildings and Dwellings
RWA	Risk-weighted assets
SECO	State Secretariat for Economic Affairs
SFSO	Swiss Federal Statistical Office
Swiss FS-CSC	Swiss Financial Sector Cyber Security Centre
TBTF	Too big to fail
ZKB	Zürcher Kantonalbank

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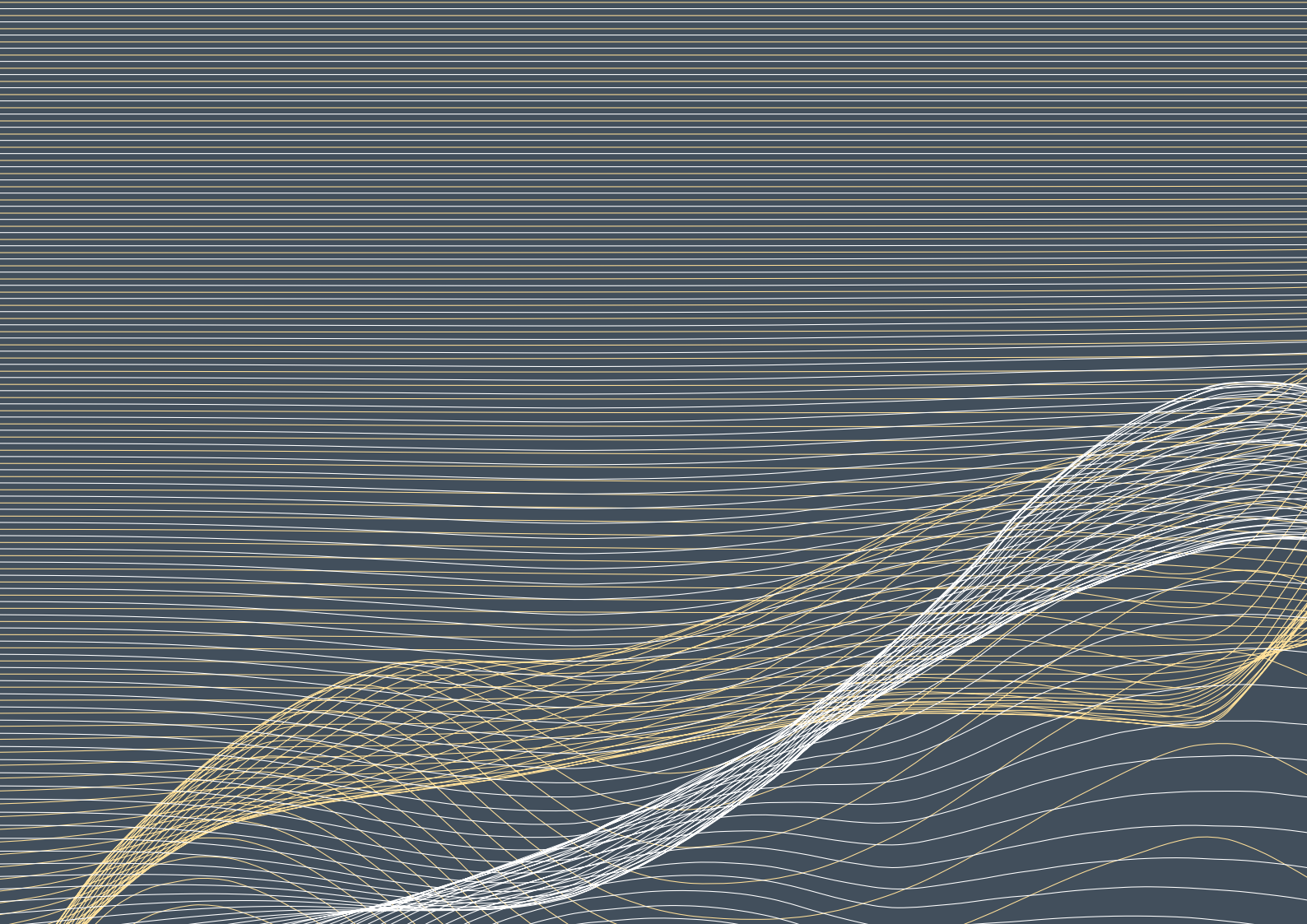
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