



SWITZERLAND

FINANCIAL SECTOR ASSESSMENT PROGRAM

June 2019

This Financial System Stability Assessment paper on Switzerland was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed in May 2019.

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SWITZERLAND

FINANCIAL SYSTEM STABILITY ASSESSMENT

May 30, 2019

KEY ISSUES

Context: A persistently rising credit to GDP ratio, high asset prices, and a prolonged external and domestic low-yield environment represent risks for the financial system. The financial, corporate, and household sectors are highly exposed to growing imbalances in the real estate sector, particularly in the residential investment property segment.

Findings: Swiss financial institutions are well capitalized and could withstand the severe shocks under the adverse stress test scenarios, but macrofinancial vulnerabilities are deepening. Important reforms have been made since the 2014 FSAP, but several critical recommendations and emerging challenges have yet to be fully addressed. Capital buffers have increased across all categories of banks, and while the two global systemically important banks have downsized and deleveraged significantly since the global financial crisis, since 2013 they have been growing again. Macroprudential measures have not been taken since 2014 and is constrained by having only one mandated tool and a self-regulation agreement with banks. The financial supervisor (FINMA) has developed into a trusted supervisor, but as a small entity, it relies heavily on external auditors to conduct on-site supervision; the associated conflict of interest and supervisory objectivity risks need to be carefully managed. The combination of an ex-post funding mechanism, a low cap on banks' contributions, and a private deposit insurance agency run by active bankers, weakens the crisis management arrangements.

Policies: To effectively address rising risks and inaction bias, the macroprudential toolkit should be expanded with supply- and demand-side tools and the macroprudential policy decision-making process should be made more agile, with greater expectation to act. FINMA's autonomy, governance, and accountability should be strengthened. FINMA—rather than banks—should contract and pay audit firms directly for supervisory audits using 'audit-level' practices in critical areas and it should itself conduct more risk-based on-site inspections, especially for the largest banks. Recovery and resolution planning should be further enhanced. The deposit insurance system should be thoroughly reformed to secure a fully-funded public deposit insurance agency with a government backstop and the authority to use deposit insurance funds for resolution measures, subject to safeguards.

- This Financial System Stability Assessment on Switzerland was prepared by a staff team of the International Monetary Fund (IMF) as background documentation for the periodic consultation with Switzerland. It is based on the information available at the time it was completed on February 6, 2019.
- The FSAP team was led by Paul Mathieu and included Atilla Arda (deputy head), Jan Nolte, Dan Nyberg, Antonio Pancorbo, Nobuyasu Sugimoto, Laura Valderrama (Monetary and Capital Markets Department [MCM]), Apostolos Apostolou (European Department), Jess Cheng (Legal Department [LEG]), and external experts Timo Broszeit, Louise Carter, Tim Clark. The team was supported from IMF headquarters by Shiyuan Chen and Christine Luttmer (MCM), and Jane Anvari, Olya Kroytor, and Kristel Poh (LEG).
- The team met with Alexander Karrer (Deputy State Secretary, Federal Department of Finance [FDF]); Thomas Bauer and Mark Branson (Chairman and Chief Executive Officer, respectively, Swiss Financial Market Supervisory Authority [FINMA]); Thomas Jordan and Fritz Zurbrügg (Chairman and Vice Chairman, respectively, Governing Board of the Swiss National Bank [SNB]); Gregor Frey and Lucas Metzger (Chief Executive Officer and Chief Operating Officer, respectively, esisuisse); and other senior officials and financial and private sector participants.
- FSAPs assess the stability of the financial system as a whole and not that of individual institutions. They are intended to help countries identify key sources of systemic risk in the financial sector and implement policies to enhance its resilience to shocks and contagion. FSAPs do not cover certain categories of risk affecting financial institutions, such as operational or legal risk, or risk related to fraud.
- Switzerland is deemed by the IMF to have a systemically important financial sector according to “Mandatory Financial Stability Assessments Under the Financial Sector Assessment Program—Update” (11/18/2013), and the stability assessment under this FSAP is part of bilateral surveillance under Article IV of the IMF’s Articles of Agreement.
- This report was prepared by Paul Mathieu and Atilla Arda with team contributions.

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This report is based on the work of the Financial Sector Assessment Program (FSAP) mission that visited Switzerland in May and November 2018, and January–February 2019. The FSAP findings were discussed with the authorities during the Article IV consultation mission in March–April 2019.

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Glossary

AML/CFT	Anti-Money-Laundering/Combating the Financing of Terrorism
BU	Bottom Up
CCyB	Countercyclical Buffer
CET1	Common Equity Tier 1
CMG	Crisis Management Group
CoVaR	Conditional Value at Risk
DFB	Domestically Focused Bank
DIA	Deposit Insurance Agency
DIS	Deposit Insurance System
DLT	Distributed Ledger Technology
D-SIB	Domestic Systemically Important Bank
DTI	Debt-to-Income
EU	European Union
FATF	Financial Action Task Force
FDF	Federal Department of Finance
FINMA	Swiss Financial Market Supervisory Authority
FMI	Financial Market Infrastructure
FSAP	Financial Sector Assessment Program
G-SIB	Global Systemically Important Bank
IMF	International Monetary Fund
LCR	Liquidity Coverage Ratio
LEG	Legal Department
LGD	Loss given default
LTI	Loan-to-Income
LTV	Loan-to-Value
MCM	Monetary and Capital Markets Department
MMFs	Money Market Funds
OAK BV	Oberaufsichtskommission Berufliche Vorsorge
PFMI	Principles for Financial Market Infrastructures
RAM	Risk Assessment Matrix
RWA	Risk-Weighted Assets
SNB	Swiss National Bank
SST	Swiss Solvency Test
STeM	Sector Stress Testing Matrix
TBTF	Too Big to Fail
TD	Top Down
VaR	Value at Risk

EXECUTIVE SUMMARY AND KEY RECOMMENDATIONS

Swiss financial institutions appear to be well capitalized and could withstand severe macrofinancial shocks, but macrofinancial vulnerabilities are deepening. Capital buffers have increased across all categories of banks, and the two global systemically important banks (G-SIBs) have downsized and deleveraged significantly—in aggregate by about one-third since 2007. In the IMF adverse scenario, banks remain above their regulatory capital hurdle rates although a few banks would breach capital buffers. The banking system has ample overall liquidity, but some banks are vulnerable to USD liquidity risk. Swiss insurers are broadly resilient against the market shocks that the FSAP evaluated. Insurers remain profitable after stress, even when assuming no recovery in asset prices; solvency rates start improving gradually in the year following the stress. However, in the medium-term, the persistence of the low-yield environment will pose increasing challenges. The financial, corporate, and household sectors are highly exposed to growing real estate sector imbalances, particularly in the residential investment property segment.

Important reforms have been made since the 2014 FSAP, but several key challenges remain. The authorities have strengthened the too-big-to-fail (TBTF) regime with leverage ratios higher than international standards, introduced governance requirements for cantonal banks, enhanced the bank resolution regime, and revised the regulatory framework for financial market infrastructures (FMIs). Legislative work is ongoing to support fintech developments, enhance insurance business conduct regulation and policyholder protection, introduce an insurance resolution regime, and revise deposit insurance. However, several critical recommendations made by the 2014 FSAP have yet to be fully addressed (Appendix I), as discussed below.

FINMA has developed into a trusted supervisor; going forward, its autonomy, governance, and accountability should be strengthened. FINMA enjoys more institutional, functional, and financial autonomy than its predecessors. It is in Switzerland's interest that there be a strong, competent, and autonomous financial supervisor, which is critical for the financial system's stability, reputation, and global competitiveness. FINMA's prudential mandate should take primacy over other mandates. FINMA should continue to strengthen its supervisory capacity and the exercise of its powers, and its authority to set binding prudential requirements and codify supervisory interpretations and practices should be preserved.

To address emerging challenges, the authorities' data collection, analytical capacity, and resources should be addressed. The availability of timely, consistent, and granular data is necessary to avoid risks going undetected. Enhancing supervisory reporting would strengthen stress testing. Pension funds' investment flows and search for yield behavior, particularly in real estate markets, need to be tracked, as the sector is large, and the data is lacking in timeliness, granularity, and coverage. Fintech firms benefitting from sandbox initiatives should be subject to reporting requirements; better data should also inform development of fintech-related policies and legislation. More resources are needed to support high-quality data gathering, to improve IT and analytical systems, to better monitor the fast-moving fintech sector, and to advance recovery and resolution planning.

Macroprudential measures worked well in 2012–14 but there is need for an expanded, mandated, and more agile and accountable macroprudential framework to address inaction bias and rising risks. The framework is constrained with only one mandated tool and a self-regulation agreement with banks. The financial sector is highly exposed to the real-estate market. A planned introduction of higher risks weights for income-producing real estate is welcome, but further supply- and demand-side tools are needed. The tax deductibility of mortgage interest payments should be reviewed to mitigate incentives for mortgage debt. Decision-making for existing, expanded, and future macroprudential tools should specify expectations—and not only possibilities—for actions by each authority, for which they should be publicly accountable. Cantonal banks remain a source of bank-sovereign risk at the cantonal level.

While bank supervision has become more effective under FINMA’s stewardship, a more robust FINMA-led supervision is needed. While a small supervisor responsible for a large and diverse sector could benefit from external supervisory audits, conflicts of interest risks need to be managed, and supervisory audits need to be focused. FINMA—rather than banks—should contract and pay audit firms directly for supervisory audits using ‘audit-level’ practices in critical areas and it should itself conduct more risk-based on-site inspections, especially for the largest banks. Explicit and strengthened assessments of banks’ key risk management and control practices, and rapid remedial actions, are needed to enforce strong corporate governance. FINMA should consider ‘post-stress’ capital requirements and restrict capital distributions when requirements are not met.

FINMA has strengthened nonbank supervision’s effectiveness, but a more engaged approach is needed to ensure that risks do not go undetected. The regulatory framework for insurance is highly sophisticated, but oversight of operational risk management and conduct regulation should be strengthened. Systemically important FMI are well developed and subject to close supervision, but their internal governance and crisis management arrangements require further work. The supervision of asset management activities would benefit from the ability to impose administrative fines, better monitoring and managing concentration risks, more granular data, and greater enforcement resources. Risks in the rapidly growing fintech space may not be well understood due to data gaps, resource constraints, and the authorities’ liberal approach. Legislative reforms to facilitate digitization should preserve a level playing field and avoid singling out blockchain and distributed ledger technology (DLT) as the technological winners.

The authorities have made progress in strengthening financial safety net and crisis management arrangements, but more work is needed to improve banks’ recovery and resolvability. Removing the G-SIBs resolvability impediments—particularly resolution funding—should be prioritized. Recovery and resolution planning should be enhanced, expanded, and expedited, including for the three domestic systemically important banks (D-SIBs) and the midsized banks that could be systemic at the point of failure in a system-wide crisis. A thorough reform of the deposit insurance system (DIS)—beyond what is currently considered—is warranted, including a fully funded public deposit insurance agency (DIA) with a government backstop and the authority to use deposit insurance funds for resolution measures subject to safeguards. The resolution framework should be supplemented with ex post recovery fees from banks for any government funding.

Table 1. Switzerland: FSAP Main Recommendations

Recommendation and Responsible Authority		Timing*
1.	Strengthen FINMA's autonomy, governance, and accountability, and preserve the primacy of its prudential mandate (FDF/FINMA; ¶32–34)	C
2.	Increase resources for high-quality data gathering and analysis of financial system risks, especially for the fast-moving fintech sector, and to advance recovery and resolution planning. (SNB/FINMA/Oberaufsichtskommission (OAK BV); ¶15, ¶29, ¶36 ¶41, ¶51, ¶54, ¶58, ¶63)	MT
Financial stability policy framework		
<i>Macroprudential</i>		
3.	Expand the macroprudential toolkit with mandated supply- and demand-side tools, and strengthen accountability and expectations to act in decision-making (SNB/FINMA/FDF; ¶35–36)	ST
<i>Banking</i>		
4.	Ensure that FINMA—rather than banks—contracts and pays directly for supervisory audits using 'audit-level' practices in critical areas (FDF/FINMA; ¶38)	ST
5.	Focus supervisory audits and increase FINMA's risk-based on-site inspections (FINMA; ¶38)	ST
6.	Strengthen assessments of key risk management and control practices (FINMA; ¶39)	MT
<i>Financial Market Infrastructures</i>		
7.	Strengthen recovery and resolution planning for financial market infrastructures (FMIs) (FINMA/SNB/SIX; ¶49)	I
8.	Improve independence of FMIs' governance arrangements (SNB/SIX; ¶48)	ST
<i>Asset Management</i>		
9.	Better monitor and manage concentration risk of regulated funds, and empower FINMA to impose administrative fines (FDF/FINMA; ¶52–53)	ST
<i>Fintech and Crypto-Assets</i>		
10.	Enhance the monitoring of activities and address regulatory gaps (FDF/FINMA; ¶58–59)	ST
Financial safety net and crisis management		
11.	Enhance, expand, and expedite recovery and resolution planning, including resolvability (FDF/FINMA; ¶63–66)	ST
12.	Thoroughly reform the DIS with a public DIA that is included in the crisis management framework, ex-ante DIS funding, and the authority to use deposit insurance funds for resolution funding, subject to safeguards (FDF; ¶67–68)	MT
* C = Continuous; I = Immediate (within one year); ST = Short Term (within 1–2 years); MT = Medium Term (within 3–5 years).		

MACROFINANCIAL BACKGROUND

A. Financial Sector Structure

1. The banking and insurance sectors are highly concentrated (Figure 1), and FMIs are operated by one private entity.

- The banking sector represents 54 percent of financial sector assets: 468 and 265 percent of GDP based on global and Swiss-only consolidation, respectively, in 2017.¹ Insurance and pension fund assets total 253 percent of GDP and other financial institutions' assets (mainly asset managers) total 190 percent of GDP.
- The two G-SIBs (Credit Suisse, UBS) account for about half of banking assets; the five SIBs (including also three D-SIBs: PostFinance;² Raiffeisen; and Zürcher Kantonalbank), for 69 percent.
- The 24 cantonal banks account for close to 18 percent of banking sector assets.
- The life insurance sector holds assets of about 52 percent of GDP, and the five largest companies have a market share of 85 percent of written premiums. Swiss Re is the second-largest global reinsurers, earning more than 98 percent of its premiums abroad. The four largest non-life insurers' market share is close to 60 percent.
- Occupational pension funds manage assets close to 150 percent of GDP; collective investment vehicles manage about 160 percent of GDP.
- SIX Group operates the real-time gross settlement system (for the SNB), the central counterparty, the securities settlement systems, and the central securities depository.

2. The two G-SIBs represent over 250 percent of GDP (Figures 2–3), and they are looking at taking on more risk. They downsized their balance sheet from over 400 percent of GDP in 2008 and improved their capital base to an average 13.1 percent Common Equity Tier 1 (CET1). Their cross-jurisdictional activity involves 60 percent of assets; intra-financial claims (liabilities) reached 20 (25) percent of assets in 2018. Domestically, their share is 33 percent in corporate loans, 27 percent in the mortgage market (down from 35 percent in 2008), and 33 percent in customer deposits. The two G-SIBs' employment has dropped to 35 percent of banking system staff from 50 percent in 2007. The G-SIBs' focus has shifted toward growth strategies and new business initiatives;³ since 2013, the two G-SIBs have grown by more than 18 percent.

¹ Swiss banks have large global wealth-management divisions, whose assets are held off-balance sheet. About 75 percent of the assets are under custody and 21 percent of assets under a discretionary asset management agreement. The Swiss Bankers association reports that Swiss banks managed CHF 6.7 trillion assets in 2016, but other sources report larger amounts.

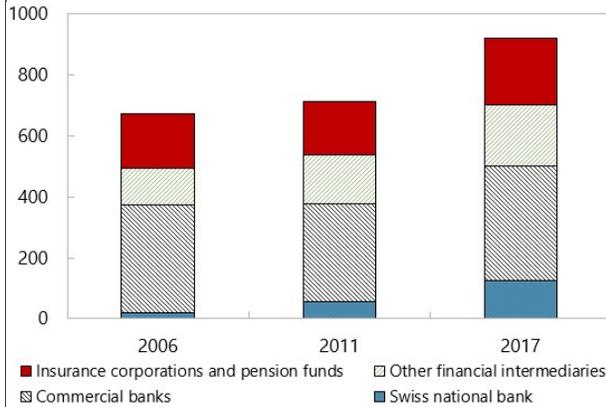
² PostFinance is Swiss Post's state-owned financial services arm.

³ SNB, Financial Stability Report, 2018.

Figure 1. Switzerland: Structure of the Financial Sector

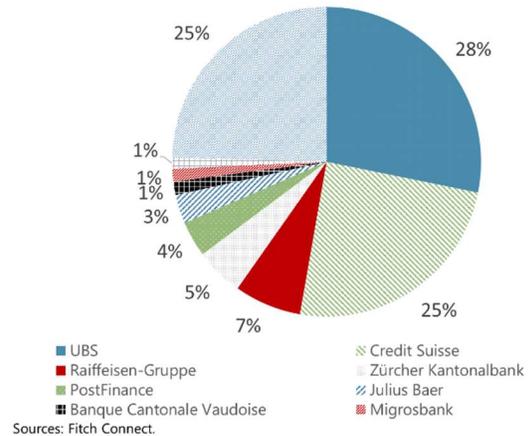
Financial Sector Asset Shares

(In percent of GDP, 2006–2017)



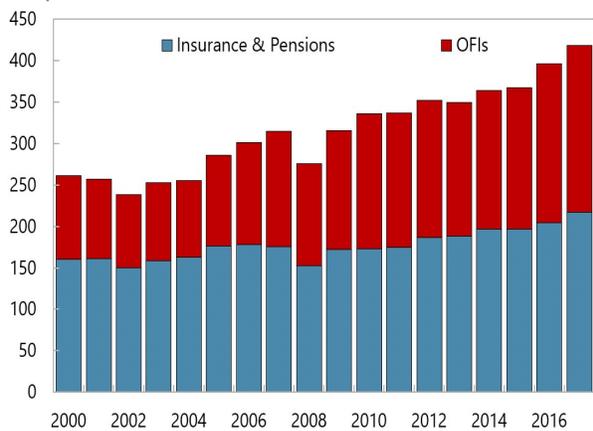
Banking Sector Asset Shares

(In 2017)



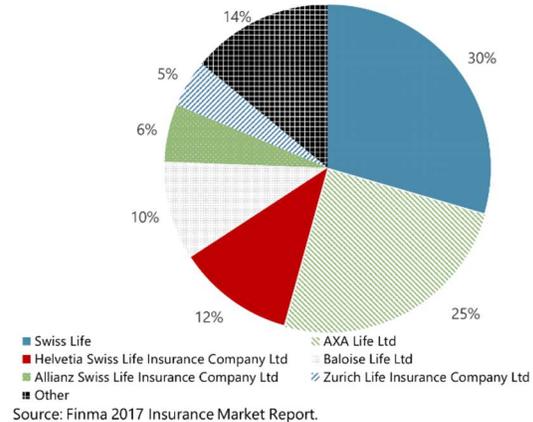
Insurance and Pensions Assets

(In percent of GDP)



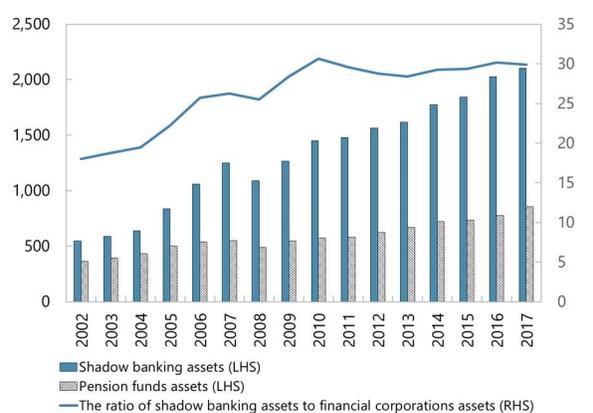
Life Insurance Sector Market Shares

(Based on Premiums Written, 2017)



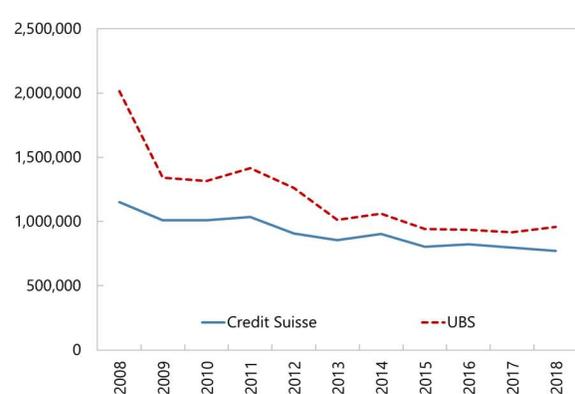
Size of Shadow Banking

(LHS in billion USD, RHS in percent)



Assets of the G-SIBs

(In million CHF)

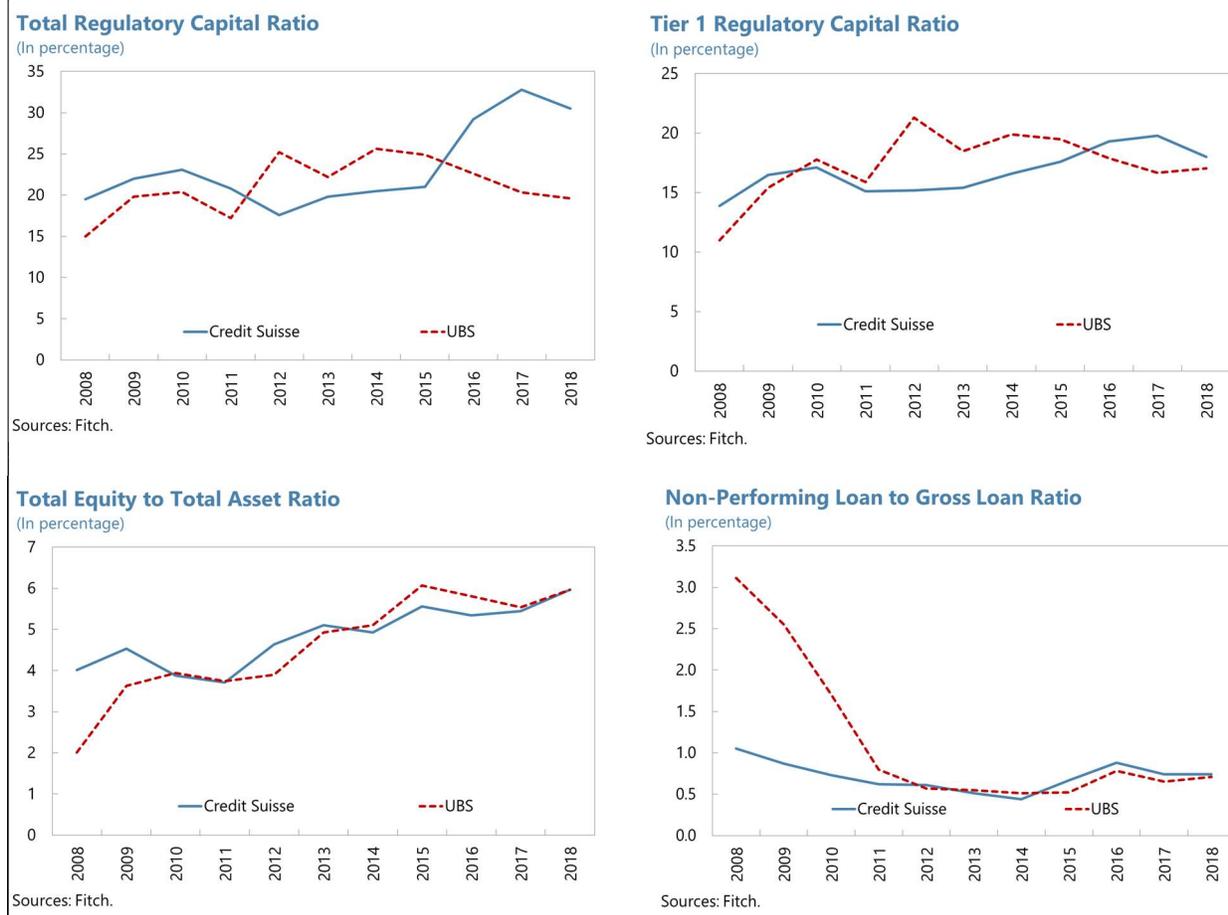


Sources: FSB, IMF Staff Calculations.

Sources: Fitch.

Sources: Financial Stability Board, 2017 Global Shadow Banking Monitoring Report, Haver Analytics, SNB, and Swiss Financial Accounts.

Figure 2. Switzerland: Progress in Deleveraging of the G-SIBs Since the Global Financial Crisis



3. About one-half of the cantons are exposed to bank-sovereign risk (Figure 4).

Credit-rating agencies justify cantonal banks' high ratings partly on the (implicit) guarantees of their respective cantons. The high ratings imply a funding advantage for cantonal banks and can incentivize risk-taking and support expansion. Many cantonal banks are substantial mortgage providers in their cantons and nationally.⁴ As some guarantees account for a multiple of the cantonal GDP, they may jeopardize local finances in the event of financial stress: 12 of 24 cantonal banks' assets exceed their respective canton's GDP. A high degree of maturity transformation and mortgage lending concentration makes cantonal banks vulnerable to a sharp snap back in interest rates and to housing market shocks. Some large cantonal banks are also active in wealth management and could face headwinds from the cost of complying with investment suitability legislation compounded by earnings pressure from low investment yield of active asset management strategies.

⁴ Cantonal banks' assets are over CHF 575 billion; 62 percent of which are mortgage loans.

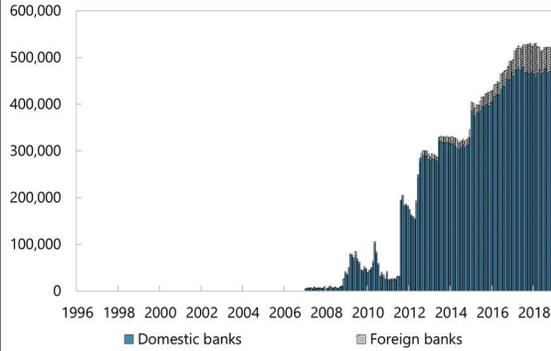
Figure 3. Switzerland: Banking Sector Developments

Banks have deleveraged, and profits have stabilized, despite pressures from narrow margins.

A quarter of unconsolidated banking system assets, reaching CHF 460 billion, are invested in sight deposits at the SNB at -75 bps (after the threshold)...

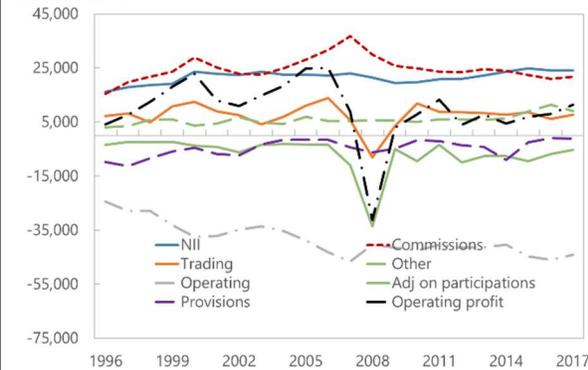
...despite the drag on profitability from negative rates, ROA has stabilized at 0.3 percent.

Sight Deposits at SNB
(In million CHF)



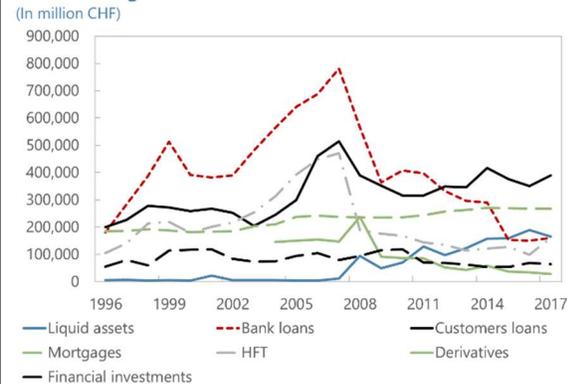
Over one third of operating income is generated by commissions mainly from securities trading and investment banking...

Breakdown of Profits
(In million CHF)

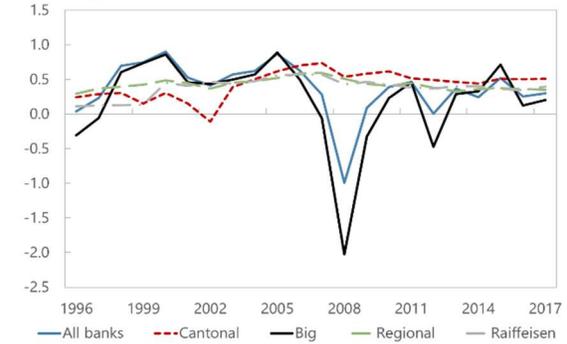


G-SIBs have deleveraged by one-third their balance sheet driven by a collapse in loans and trading assets...

Assets of Big Banks
(In million CHF)

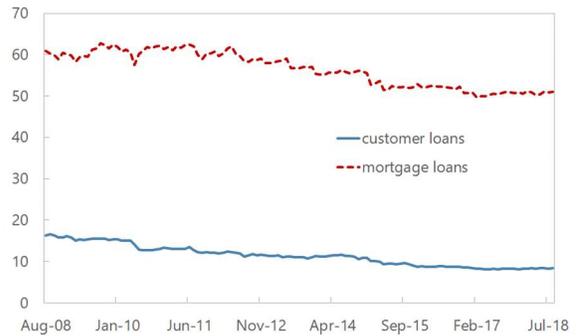


Return on Assets
(In percentage)



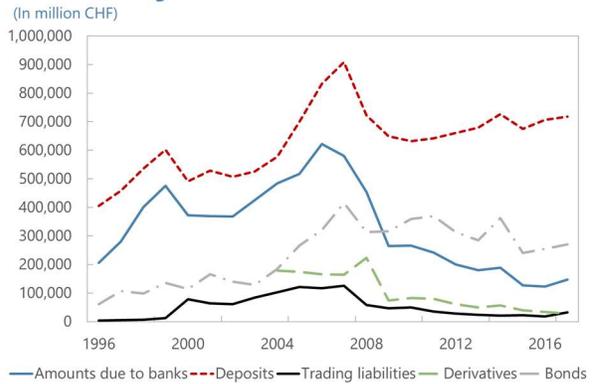
...with over 50 percent of assets allocated to mortgage loans and over half of customer loans being Lombard facilities.

Loan Allocation
(Percent of assets)



...mirrored by a drop in intra bank funding and a contraction of customer deposits.

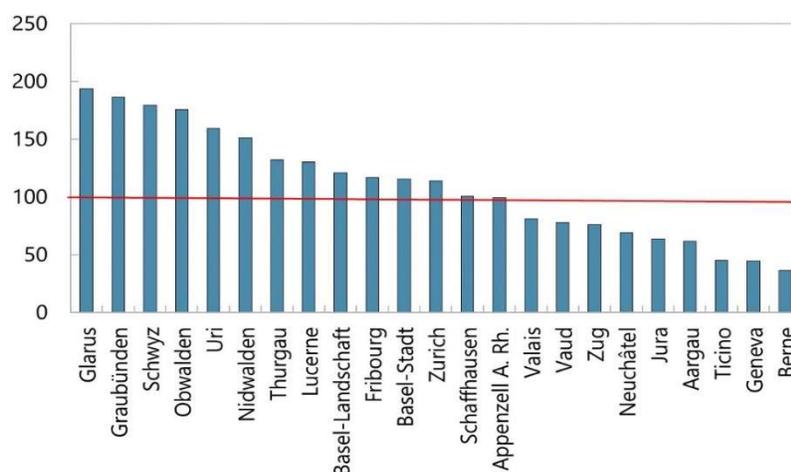
Liabilities of Big Banks
(In million CHF)



Source: SNB and IMF staff estimates.

Figure 4. Switzerland: Cantonal Bank Total Assets to Cantonal GDP Ratio
(In percent, in 2016)

12 out of 24 cantonal banks' assets exceed their respective cantonal GDP.



Source: Swiss Bundesamt für Statistik; S&P Global Ratings.

4. The Swiss insurance market is large and well developed, with one of the highest penetrations and expenditure per capita ratios in the world. Switzerland is home to large internationally active insurance groups. Despite improved business models, the prolonged low-yield environment remains challenging. Low interest rates drain life insurers' profitability, particularly on those with larger legacy business carrying high interest rate guarantees. Swiss insurers reacted early by reducing the volume of guaranteed business, focusing more on protection products and products with low or no guarantees attached. The low-yield environment is also challenging for many small pension fund and asset managers (the latter account for a sizable 11 percent of the market).

B. Macrofinancial Risks

5. The positive credit gap is large and persistent,⁵ and banks have high real-estate exposure (Figure 5). Negative interest rates—expected to continue—and sharply declining net interest margins (Figure 6),⁶ have encouraged risk taking and risks in real estate have increased. Historically high house prices (Figure 7) pose credit risks, due to imbalances between prices and rents or income, and banks' high exposure to real estate markets.⁷ Domestic balance sheets are heavily exposed (and regionally concentrated) to real estate.

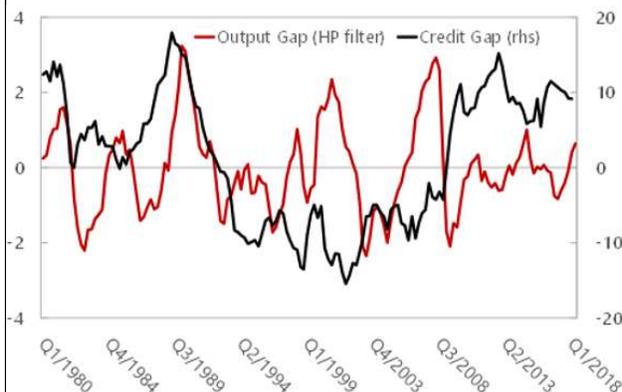
⁵ The BIS defines the credit-to-GDP gap as the difference between the credit-to-GDP ratio and its long-run trend.

⁶ See further, Country Report No. 18/174.

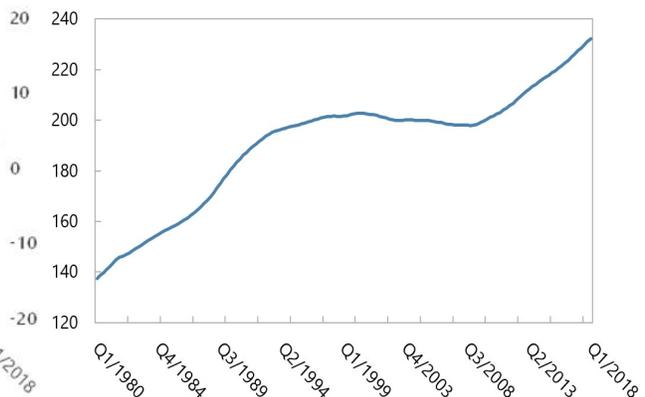
⁷ Over the last ten years, the price-to-income and price-to-rental ratios for owner-occupied real estate increased by a cumulative 27 percent and 22 percent, respectively.

Figure 5. Switzerland: Credit and Business Cycle

Output and Credit Gaps (In percent)



Credit Trend¹ (Ratio)



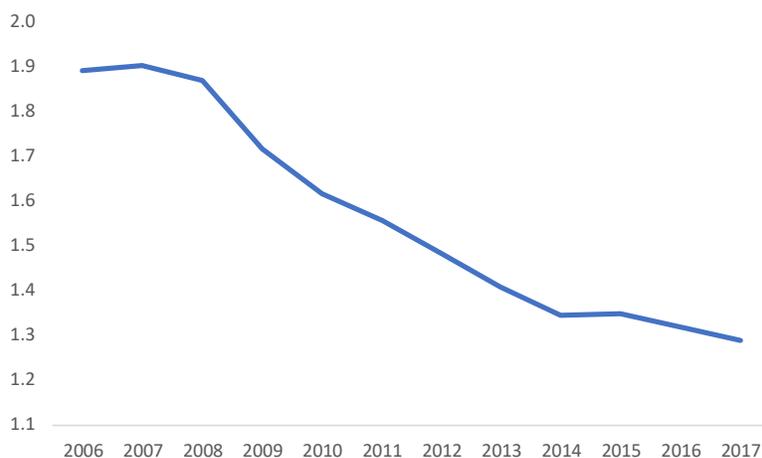
Sources: Haver Analytics and BIS.

¹ Long-term trend of private nonfinancial credit-to-GDP calculated using a one-sided Hodrick-Prescott filter with a smoothing parameter of 400,000.

Figure 6. Switzerland: Net Interest Margin on Loans¹

Domestically Focused Commercial Banks, Weighted Average² (In percent)

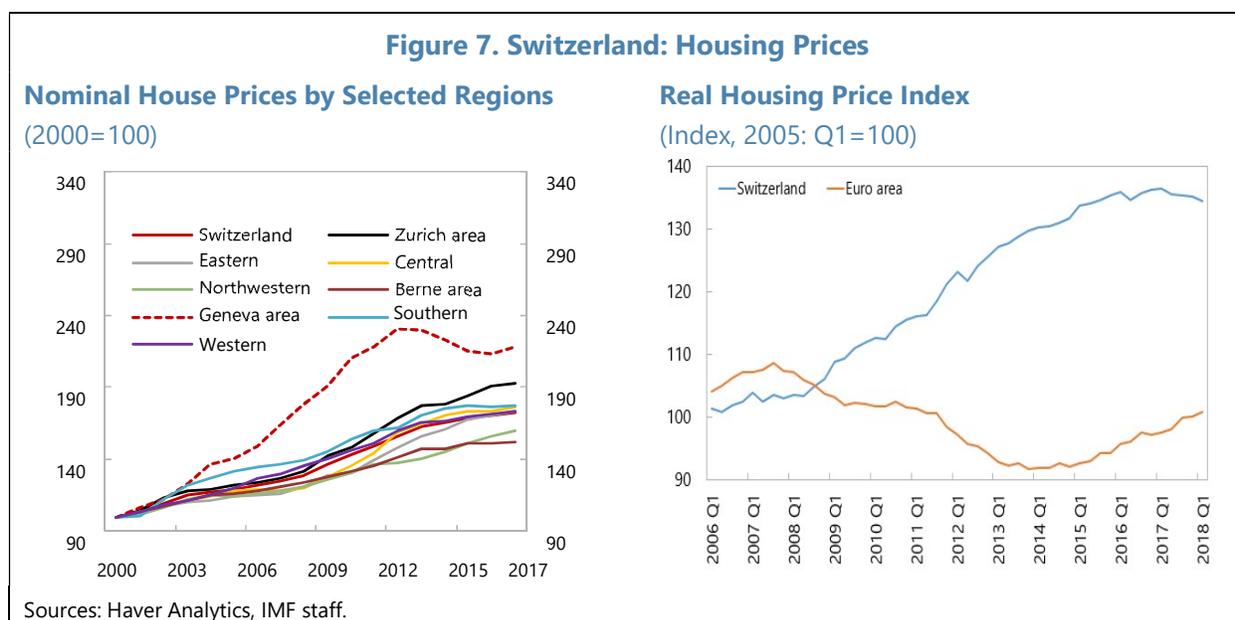
The interest margin on loans has declined as loans issued in the past are renewed at lower rates.



Sources: SNB and IMF staff calculations.

¹ The interest margin is net interest rate operations divided by the sum of mortgage claims and claims against customers.

² Domestically focused commercial banks include cantonal banks, Raiffeisen banks, and regional and savings banks.

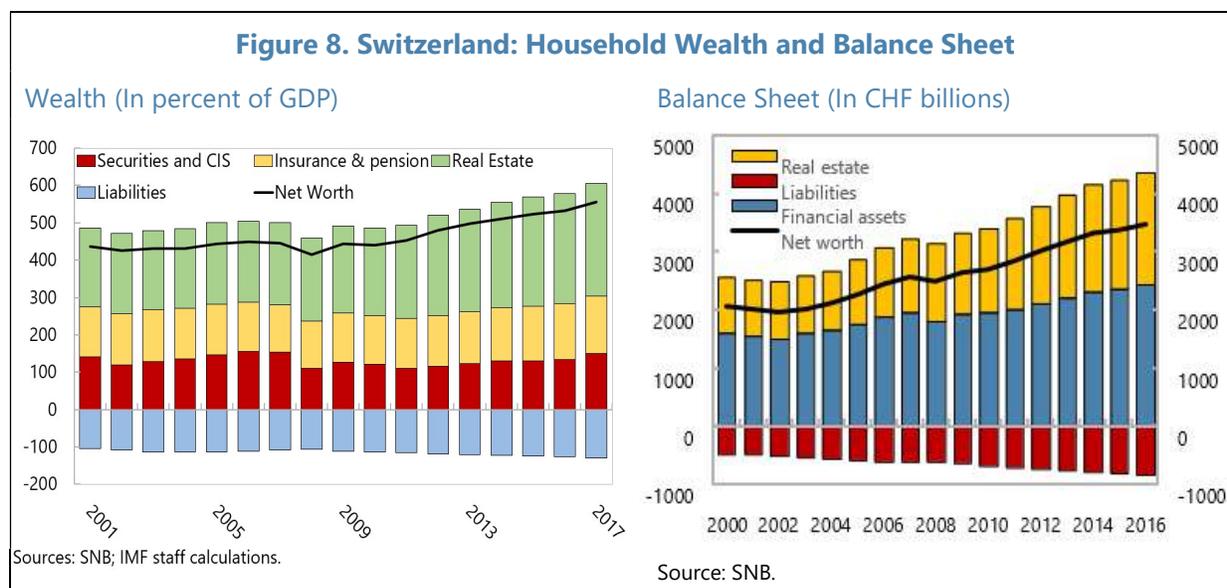


6. Household and nonbank financial firms have large exposures to real estate (Figure 8). The exposures are through direct ownership and indirectly through bank deposits, pension and insurance vehicles, equity holdings, and investment funds. Household gross liabilities—at 130 percent of GDP—are among the highest in the world and mostly relate to mortgage borrowing. While household net worth is very large (some 500 percent of GDP), over 40 percent is accounted for by directly-held real-estate.⁸ Households have exposure through direct ownership of property, at about 303 percent of GDP, and indirectly through savings and bank deposits; most of their liabilities are related to mortgages. There may also be large indirect exposures to real estate in the pension and collective investment schemes. Swiss home owners tend to accumulate financial assets rather than amortizing their mortgage loans.⁹ Seventy five percent of bank loans were for mortgages in September 2018 (60 percent for the two G-SIBs).¹⁰ Moreover, pension funds, insurers, and fund managers have substantial direct exposures to domestic real-estate. Pension funds' direct exposure to real estate is about 19 percent of assets, of which 89 percent is invested domestically. Insurers' exposure has increased to about 10 percent of their assets.

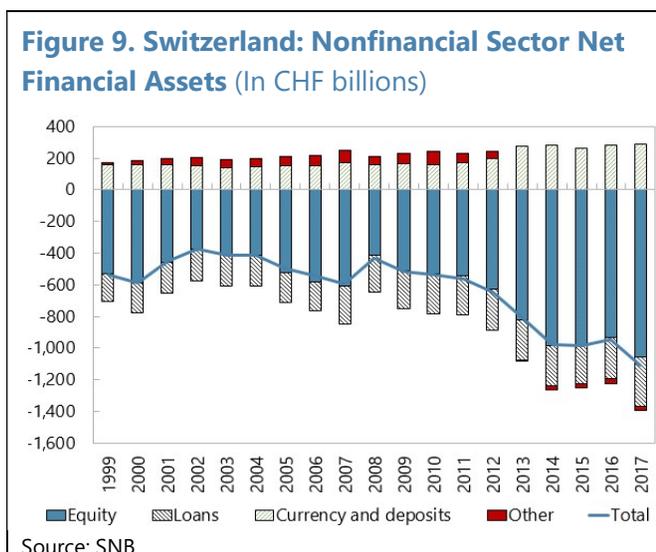
⁸ The distribution of household wealth, and assets and liabilities, could also pose macrofinancial risks.

⁹ Under the "self-regulatory" framework, owner-occupiers are only required to amortize their mortgage debt above a loan-to-value ratio of 67 percent.

¹⁰ The figure declines to one-third at the consolidated banking level.



7. Nonfinancial corporates have substantial financial liabilities, but these could partly relate to Switzerland’s appeal as an investment destination and some conceptual measurement biases related to the allocation of savings in the national accounts (Figure 9).¹¹ Nonfinancial corporates also have substantial real assets.¹² Large Swiss multinational companies have major international operations and a diverse ownership structure; they borrow and operate in international markets.



8. Imbalances in the residential investment property segment and risks associated with affordability are growing. The deterioration in the price-to-income and price-to-rent ratios (Figure 10),¹³ and the increase in vacancy rates of properties, point to rising risks in the real-estate sector. Private and institutional

¹¹ Conceptual measurement biases refer to the blurred boundaries between residents and non-residents, and the attribution of income across countries. For more information, see the 2018 IMF External Sector Report.

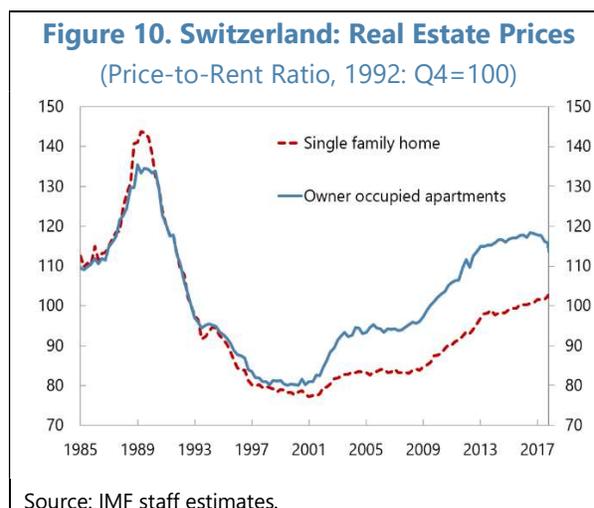
¹² Swiss banks’ exposures to corporates amount to 7 percent of total assets. Banks have only 2 percent exposures to large Swiss companies.

¹³ After the real-estate bubble in the late 1980s, some cantonal banks went bankrupt or were rescued, and the banking industry consolidated. Switzerland experienced a recession and severe financial stress.

investor demand for rental properties is high,¹⁴ driving up prices; leverage in the build-to-let segment is also high.

Mortgages in this segment account for about one-third of bank mortgages. Loan affordability risks have risen with about half of new loans issued exhibiting high loan-to-income (LTI) ratios. Moreover, nonbank lending is growing quickly and is exerting further downward pressure on banks' lending rates and profitability. Potentially significant structural changes in the mortgage market could further pressure banks' margins and profits, driving greater risk-taking behavior. Potential drivers include changes to the tax deductibility of mortgage interest payments and taxation of imputed rents, and, potentially, a

large new entrant to the real-estate mortgage markets (e.g., PostFinance).¹⁵ In 2012 and again in 2014, the authorities acted by raising the sectoral countercyclical buffer (CCyB) and agreed a tightened self-regulation on loan-to-value (LTV) limits with the banking industry, but no macroprudential measures have been taken since.¹⁶



SYSTEMIC RISK AND RESILIENCE

9. The Swiss financial sector is vulnerable to a variety of cyclical and structural shocks.

The FSAP Risk Assessment Matrix (Appendix II) summarizes financial-system-relevant shocks. Moreover, due to Brexit, the G-SIBs could become subject to euro area supervisory and resolution authorities, depending on the size and materiality of their subsidiaries in the European Union (EU).

A. Banking Sector Resilience and Stress Testing

Methodology

10. The FSAP banking sector stress tests used confidential firm-specific supervisory data—a first for a Switzerland FSAP—and covered nearly 80 percent of the Swiss banking sector.¹⁷ The FSAP developed a structural model of the mortgage portfolio by risk bucket, tailored

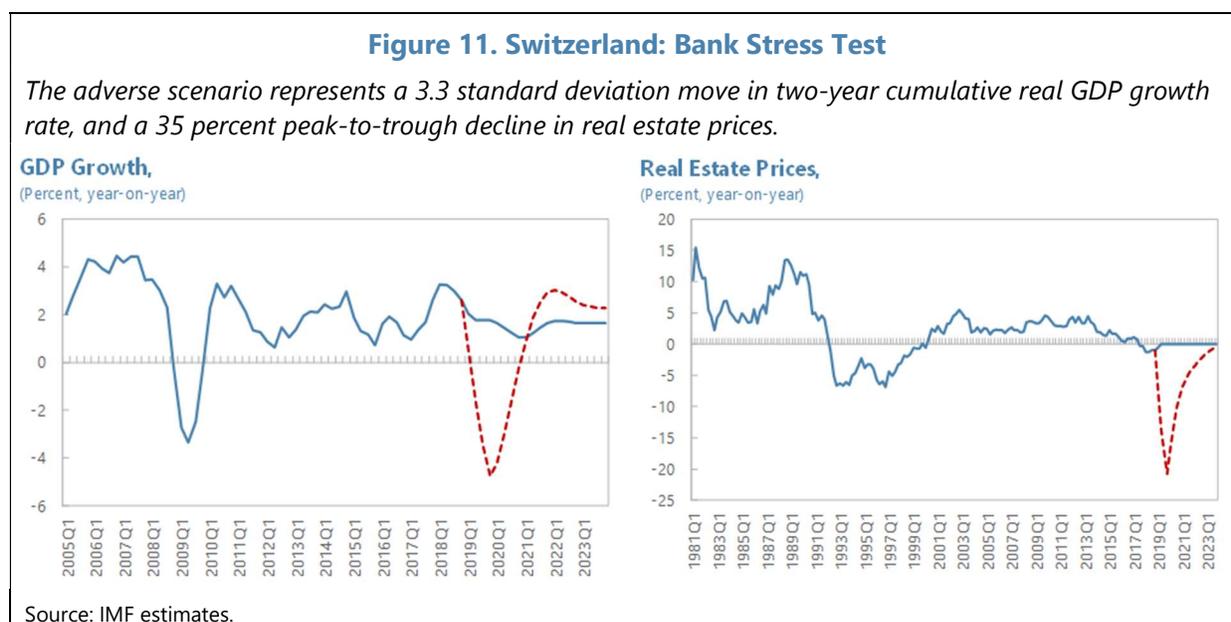
¹⁴ Real estate prices are to a large extent driven by domestic investors; with some exceptions, foreign buyers are not allowed to directly invest in real estate.

¹⁵ PostFinance is Swiss Post's state-owned financial services arm. The government has proposed to partially privatize PostFinance and provide it with a full banking license.

¹⁶ The Federal Council decides on the CCyB stance on a proposal by the SNB after consultation with FINMA.

¹⁷ In terms of consolidated assets as of June 2018, run at the highest level of consolidation. Appendix IV details the solvency tests' specifications and methodology.

to the Swiss mortgage market,¹⁸ and undertook a granular analysis of the interest rate risk in the banking book with dynamic effects. The resilience of the banking sector was assessed under baseline and adverse scenarios covering five years (Figure 11).¹⁹



Solvency Stress Testing

11. Under the baseline scenario, capitalization ratios decrease slightly, reflecting the low interest rate environment. Baseline projections imply a weighted-average 70 basis point decrease in banks' CET1 ratio by 2020 with some variation across banks.²⁰ The results also vary across business models, with domestically focused banks (DFBs) facing greater profitability challenges.²¹ These banks are more affected by the negative liability margin under current baseline conditions.

12. Under the adverse scenario, while all banks meet minimum capital requirements, a few banks breach their capital buffers. Macroeconomic shocks and market risks deplete capital ratios by an average of 440 basis points at the low point of stress, with a wide degree of variation across banks (Figure 12).²² Results also vary across groups due to differences in business models, risk exposures, and geographic segmentation. Comparable, if somewhat more favorable, results were obtained by the SNB top down (TD) tests and G-SIBs' bottom up (BU) tests (Figure 14). The impact

¹⁸ Risk buckets included estimated vintage distributions of loan-to-income and loan-to-value ratios. FSAP results were broadly comparable to FINMA's 2018 pilot mortgage stress test exercise involving 18 banks.

¹⁹ Appendix III shows paths for core macrofinancial variables projected in the stress test scenario.

²⁰ The assumed dividend payout rule is on average 50 percent of net profits.

²¹ DFBs include banks with domestic credit exposure amounting at a minimum 50 percent of their total balance sheet. They represent one-third of total banking system assets.

²² Capital depletion for the sample of banks represents about 3 percent of projected nominal GDP in 2022.

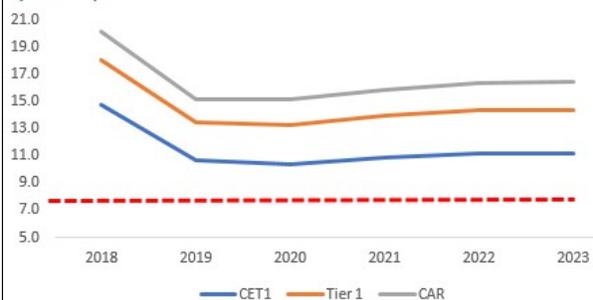
of the adverse scenario on banks' capital positions reflects stressed earnings and risk-weighted assets (RWAs) expansion, with the contribution from other risk factors evenly distributed (Figure 13).

Figure 12. Switzerland: Results of the FSAP Solvency Stress Test—Adverse Scenario

Risk-based CET1 ratios decline by 440bps at the low point of stress to 10.4 percent...

Capital Ratio

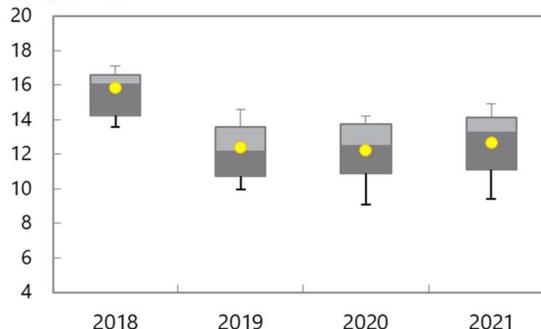
(Percent)



...with some variation of impact across banks.

CET1, All Banks

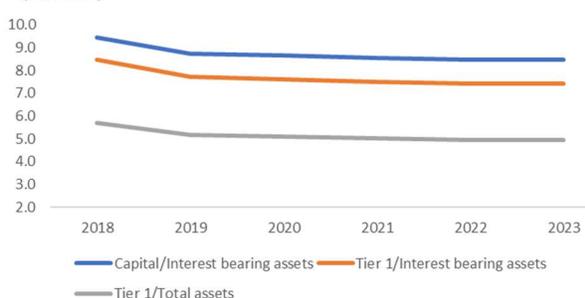
(In percent)



Risk-neutral Tier1 leverage ratios soften by about 70 basis points by the end of the horizon.

Leverage Ratio

(Percent)



Profit and loss impact is driven by market price shocks on fair value portfolios, and significant stress in commissions and net interest income.

Net Profit Components

(CHF Million)

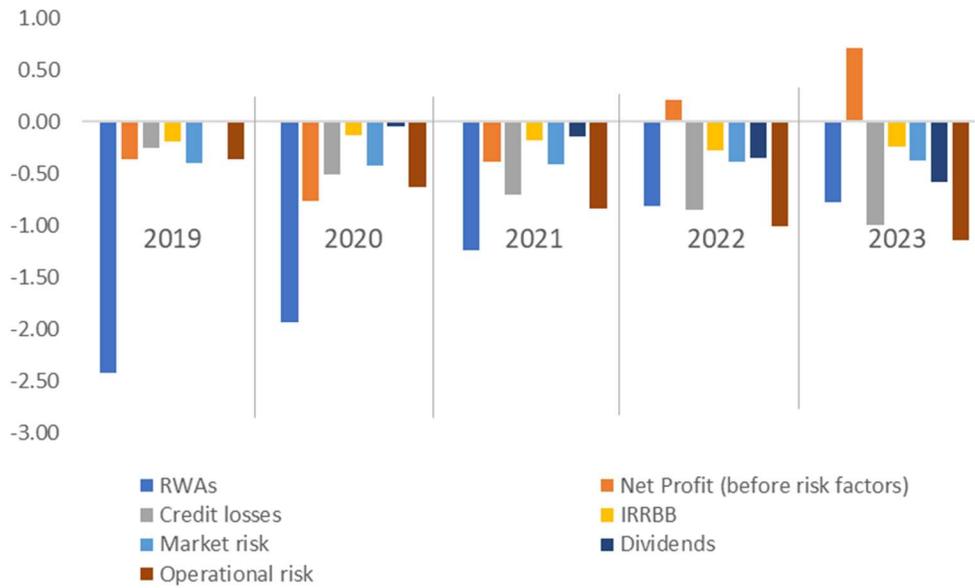


Source: Fund Staff estimates. The sample included twelve major banks. Aggregate results (top LHS, and bottom LHS charts) are weighted by asset size. The boxplot (top RHS chart) shows the distribution of individual bank results. The dashed line indicates the minimum capital regulatory ratio. Boxplots include the mean (yellow dot), the 25th and 75th percentiles (boxes) and the 15th and 85th percentiles (whiskers).

Figure 13. Switzerland: Cumulative Impact on CET1, All Banks

(In percentage points)

The shortfall of 440 basis points in aggregate capital ratios at the low point of stress in 2020 is driven by RWA expansion, stressed earnings, operational risk, credit risk losses, and market risk.



Source: IMF staff estimates.

Figure 14. Switzerland: Results of the Solvency Stress Test by Type of Bank

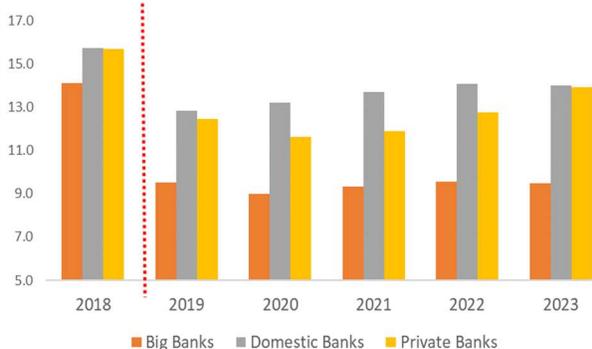
Results differ across groups of banks due to differences in business models, risk exposures, and geographic segmentation.

By 2020, the capital depletion reaches 510bps for G-SIBs, 410bps for private banks, and 260bps for domestic banks according to IMF calculations.

IMF TD results are broadly in line with SNB TD results calculated over the common stress test sample, including 2 G-SIBs and 6 Domestic banks.¹

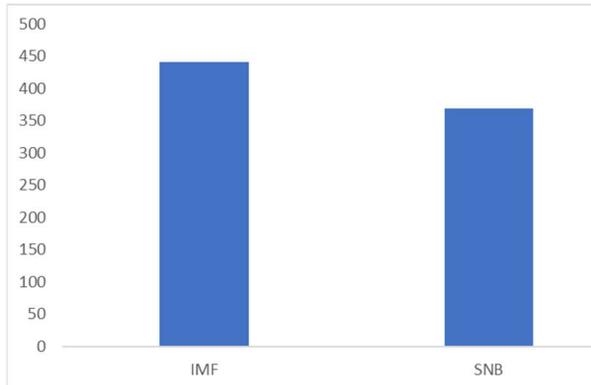
CET1 by Group

(In percent)



CET1 Depletion in 2020, G-SIBs and 6 DFBs

(In basis points)

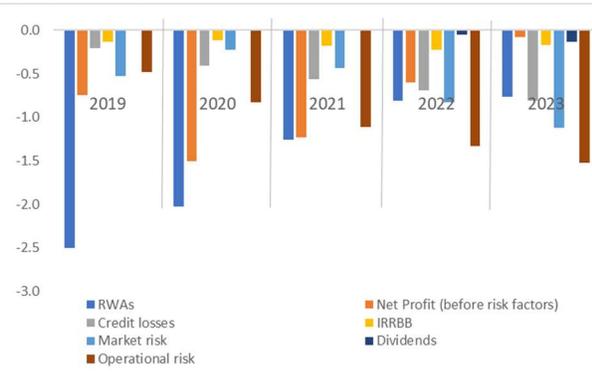


Domestic banks are relatively less impacted due to their lower exposure to business risk, market risk, and operational risk

Fund results suggest that G-SIBs are comparatively more impacted by shifts to RWAs, market risk, business risk, and operational risk.

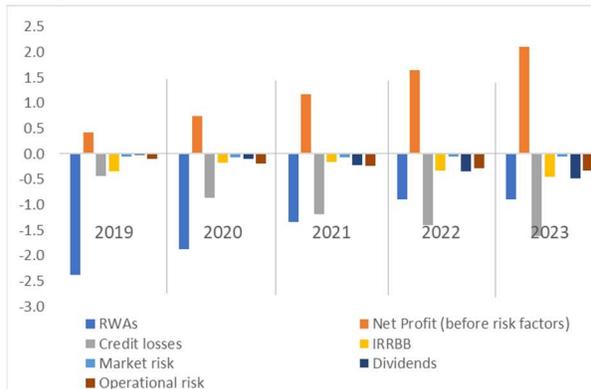
Cumulative Impact on CET1, Large Banks

(In percent)



Cumulative Impact on CET1, Domestic Banks

(In percent)



Sources: IMF staff estimates and the SNB. The sample of banks includes the two G-SIBs, six DFBs, and four private banks for the top LHS chart; the two G-SIBs for the RHS charts, and the six DFBs for the bottom LHS chart.

¹ Differences in results are mainly attributable to the higher contribution of RWAs to capital depletion in the Fund test.

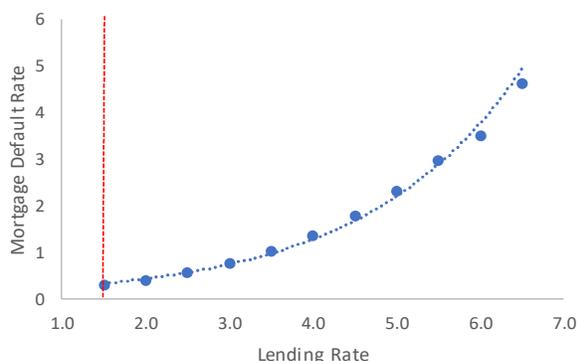
13. The capital impact of mortgage default risk from the combination of a large real estate price correction and rising lending rates could be quite large. Under the adverse scenario (a 25-percent correction in real estate prices over two years and a rise in 10-year mortgage lending rates from 1.5 to 3.0 percent) default rates rise to about 1 percent, leading to an aggregate 60 basis points CET1 capital depletion for the G-SIBs and DFBs (excluding private banks).²³ Sensitivity tests suggest that default rates increase exponentially with the size of the shock--with lending rates of 6.0 percent the capital depletion would reach 275 points (Figure 15).

Figure 15. Switzerland. Sensitivity Test: Mortgage Risk

Mortgage default risk rises exponentially with shocks to lending rates.

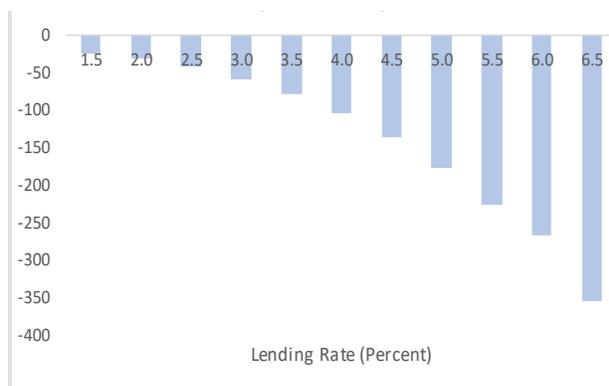
Default risk sensitivity to interest rate shocks.
A parallel move in lending rates to 6 percent, combined with a 25 percent housing price correction, would lead to a 3.5 percent default rate.

Lending Rate Sensitivity
(In percent)



Contribution of default risk to CET1 depletion.
A 3.5 percent mortgage default rate would lead to a 275 bps capital depletion in the average CET1 ratio of the G-SIBs and the DFBs (excluding private banks).

ΔCET1 Ratio
(In basis points)



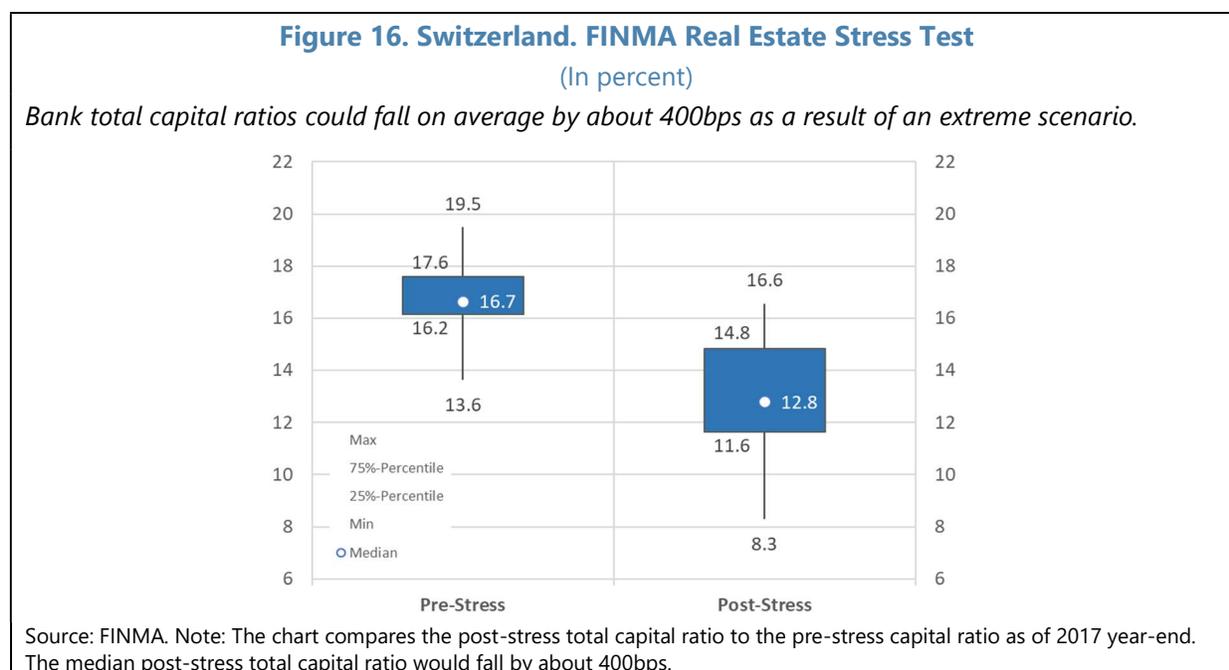
Source: IMF staff estimates.

Note: The red line in the LHS chart shows the current rate for a 10-year mortgage. The test is based on an unemployment shock of 110 basis points, a house price correction of 25 percent, and a wide range of interest rate shocks. These projections are built on conservative assumptions related to: the distribution of historical vintages by LTV and LTI similar to the matrix observed in June 2018; the repricing tenor of outstanding mortgages; and, banks' activation of margin calls from the widening in Point-in-time LTV ratios due to a real estate price correction required to satisfy the amortization of the second mortgage over the remaining maturity of the mortgage.

²³ The vulnerability of DFBs to sharp rises in interest rates is also explored by the Swiss authorities. Their results indicate that DFBs are more vulnerable to harsher interest rate shocks than G-SIBs, due to net interest income compression due to maturity mismatches, in combination with a surge in write-downs on domestic mortgages.

14. In an extreme scenario, FINMA real estate stress tests indicate that total capital ratios could fall on average by about 400 bps (Figure 16).²⁴ In 2018: Q4, FINMA undertook a mortgage stress test covering 18 banks, including SIBs and other DFBs.²⁵ To capture mortgage risk profiles properly, banks were required to provide their portfolio distribution by region, LTV, and LTI. The potential mortgage stress loss over seven years was determined based on a predefined stress scenario calibrated by FINMA on the Swiss mortgage crisis of the late nineties. The 2018 stress test revealed the following key insights:

- On average, compared to the previous tests undertaken between 2012 and 2017, the banks' risk profile has deteriorated, meaning that the loss ratios for the same negative scenarios are higher than in previous years.
- The risks have generally shifted from owner-occupied residential properties to investment properties. Over 70 percent of the stress losses are incurred in the investment property portfolio, although this only accounts for 29 percent of total mortgage lending in the sample.
- About half of the banks would fall below their capital thresholds,²⁶ in some cases by a wide margin, and would therefore have to raise additional capital.



²⁴ Since 2012, FINMA has conducted regular real estate stress tests as a microprudential supervisory tool. Key scenario assumptions include: (i) a 30–40 percent real estate price correction for the owner-occupied segment (44–54 percent for owner-occupied luxury segment), and 35–45 percent for both the investment-led segment and commercial real estate; and, (ii) a hike in lending rates to 7.0 percent.

²⁵ The sample covered approximately 70 percent of the total Swiss mortgage lending currently standing at over CHF 1,000bn.

²⁶ The capital threshold is defined as the total capital ratio, which is the total required regulatory capital incl. anticyclical buffer divided by RWA.

15. The SNB's stress testing framework could be further enhanced. The consistency and granularity of supervisory reporting should be increased, supported by user-friendly IT systems.²⁷ The analysis of risk interactions should be deepened, particularly for credit, market, and basis risks, and for solvency and liquidity feedback loops. The Swiss authorities should include major private banks in the stress testing framework. The failure of a major private wealth-management bank could expose the Swiss banking system to significant reputational risk, spread to other Swiss banks through their wealth management activities, and affect funding markets.

Liquidity Stress Testing

16. While all banks in the sample meet the 100 percent minimum liquidity coverage ratio (LCR) requirement, there are foreign currency liquidity mismatch risks (Figure 17). The average LCR across all banks stood at 165 percent in 2018: Q2 owing to an ample stock of high-quality liquid assets, with the two G-SIBs and the four private banks posting comparatively higher ratios. In contrast, the LCR in USD tends to be more volatile and falls substantially below 100 percent for many banks. Some banks are vulnerable to high run-off rates in unsecured corporate funding, operational deposits, repo operations, and liquidity risk from contingent liabilities.

17. The LCR-based tests reveal potential currency mismatches for some Swiss banks. Maturity transformation and portfolio diversification results in vulnerabilities to USD unsecured retail funding, with high-value deposits subject to a higher run-off rate than other liabilities in the LCR framework. Private banks have global franchises benefitting from wealth creation across regions, funded with client sight deposits partly in USD. Currency mismatch risk is also present in the G-SIBs with their central intragroup funding and large U.S.-centric activities, including market-making and execution services in foreign exchange cash and swap markets. While USD liquidity poses a potential challenge for some banks, the banks with a USD deficit have an EUR and CHF excess and could use swap markets to tap USD funding. However, banks remain vulnerable to turmoil in global money markets that can spill over into FX and currency swap markets. Banks should ensure that currency-specific mismatches are managed effectively to reduce the risk of funding strains and FINMA should ensure that major currency-specific liquidity requirements are closely monitored.

18. The LCR-based tests suggest that the largest Swiss banks are less resilient to a wholesale event than to a retail event.²⁸ Under more stressed conditions than prescribed by the Basel 'Retail' and 'Wholesale' scenarios, the average LCR ratio declines to about 140 and 95 percent, respectively. The ratio's sensitivity to a wholesale event is higher than to a retail event, reflecting potential liquidity risk from high value deposits and contingent liabilities.

19. Cash-flow based liquidity stress tests suggest that most banks are resilient (Figure 18). This is underpinned by large liquidity buffers, despite a few banks' relatively high share of encumbered assets due to covered bonds, derivatives, and securities financing transactions.

²⁷ This includes enhanced granularity of regular reporting on banks' securities and investments portfolios, and the geographical breakdown of material exposures by the obligor's residence.

²⁸ The net stable funding ratio is not yet implemented in Switzerland.

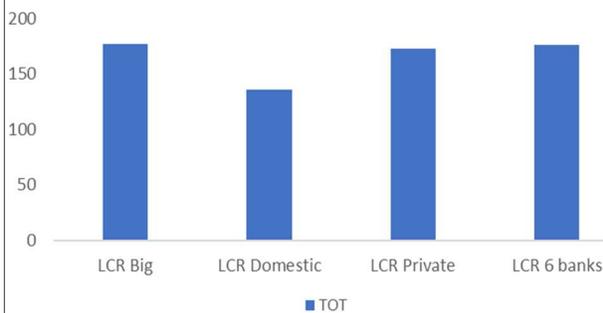
Figure 17. Switzerland: Banks' Liquidity Positions

Swiss banks post high overall LCR ratios, Swiss francs, and Euros, but their ratios in USD fall significantly below 100 percent under the stress scenario. Some banks are vulnerable to a stressed wholesale scenario characterized by high run-off rates in unsecured corporate funding, operational deposits, repo operations, and liquidity risk from contingent liabilities.

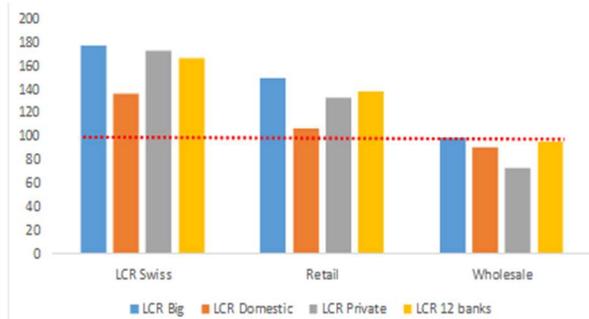
The average total currency LCR stood at 165 percent in 2018: Q2 with G-SIBs and Private banks posting comparatively higher ratios than domestic banks.

A Retail-based scenario would erode the LCR ratio to 140 percent, while a Wholesale-based scenario would have a greater impact leading to a post-stress 95 percent LCR ratio.

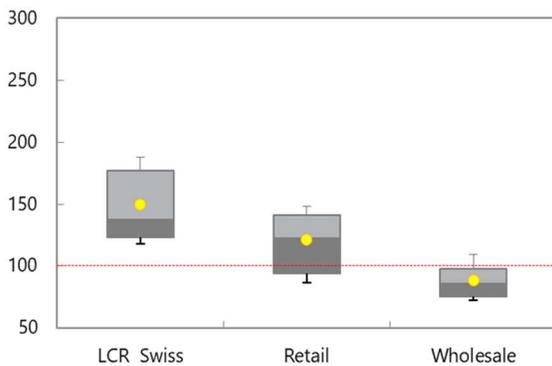
LCR Swiss Total Currency
(In percent)



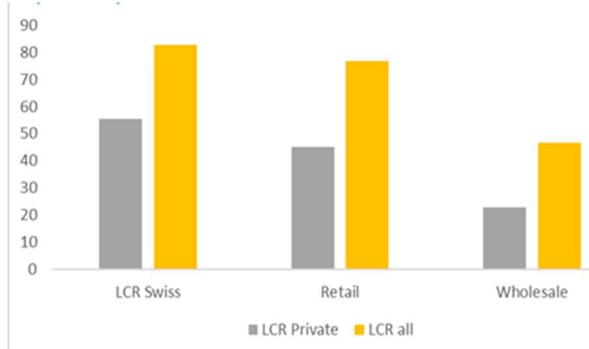
LCR Total Currency
(In percent)



LCR, 12 Banks
(In percent)



LCR USD
(In percent)



Sources: IMF Staff Estimates and FINMA.

Figure 18. Switzerland: Cash-Flow Based Stress Test Results

While a few banks become illiquid under the 30-day Cash-Flow test, they are small relative to system-wide liquid assets and aggregate total assets.

5-day Cash-Flow Test

	Cumulative loss of all unsecured funding (In percent)	Cumulative loss of all secured funding (In percent)	Minimum number of days of survival	No. of banks illiquid	Percent of banks illiquid (In percent)	Net cash shortfall relative to total liquid assets (In percent)	Net cash shortfall relative to total assets (In percent)
t_0	0.0	0.0	0	0	0.0	0.0	0.0
Day 1	4.0	17.1	1	0	0.0	0.0	0.0
Day 2	7.8	30.8	2	0	0.0	0.0	0.0
Day 3	11.4	41.8	3	0	0.0	0.0	0.0
Day 4	14.8	50.5	4	0	0.0	0.0	0.0
Day 5	18.1	57.5	5	0	0.0	0.0	0.0

	Total Sample	Group 1	Group 2
Number of Banks failing the test	0	0	0
Liquidity Shortfall	0	0	0
Liquidity Shortfall (In % of total)	0.0	0.0	0.0
Liquidity Shortfall (In % of liquid)	0.0	0.0	0.0

30-day Cash-Flow Test¹

	Cumulative loss of all unsecured funding (In percent)	Cumulative loss of all secured funding (In percent)	Survival	No. of banks illiquid	Percent of banks illiquid (In percent)	Net cash shortfall relative to total liquid assets (In percent)	Net cash shortfall relative to total assets (In percent)	Weighted avg. capital adequacy ratio of failing banks (In percent)
	23.4	100.0	No	4	19.0	-1.5	-0.3	1.2
			Yes	17	81.0	0.0	0.0	0.0

	Total Sample	Group 1	Group 2
Number of Banks failing the test	4	4	0
Liquidity Shortfall	-15,009,752	-15,009,752	0
Liquidity Shortfall (In % of total)	-0.3	-0.4	0.0
Liquidity Shortfall (In % of liquid)	-1.5	-1.6	0.0

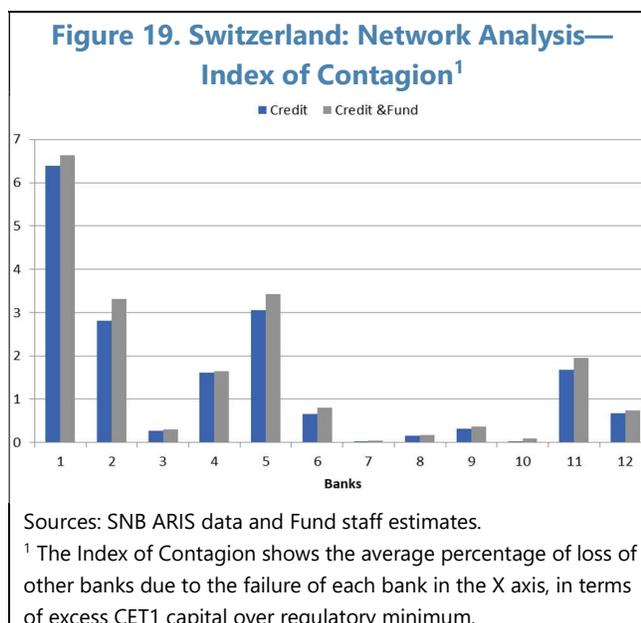
	Liquidity shortfall by percentile (according to assets)					Individual		
	Top 10% (i.e., largest banks)	10%-25%	25%-50%	50%-75%	75%-90%	90%-100%	max	min
Shortfall (abs)	0	-13,403,082	-15,009,752	-15,009,752	-15,009,752	0	-13,403,082	-13,396
Percent of Liquid Assets	0.0	8.5	61.5					
Number	0	1	4	4	4	0	13	

Sources: IMF Staff Estimates and FINMA. Figures are expressed in thousands of CHF.

¹ The output table of the 30-day Cash-Flow test shows the number of banks that become illiquid after 30 days of cumulative stress (column "Survival", row "No"), and their size relative to system assets (column "Net cash short shortfall") using FINMA contractual maturity mismatch data. Stressed assumptions on contractual in- and outflows, and available unencumbered assets are shown in Jobst, Lian Ong, and Schmieder (2017), "Macroprudential Liquidity Stress Testing in FSAPs for Systemically Important Financial Assets", IMF WP/17/102.

Interconnectedness

20. Contagion through exposures within the Swiss interbank market are currently low relative to their capital buffers. The aggregate Swiss network density of interbank exposures is low. Interconnectedness is contained, except for interbank exposures between the two G-SIBs and some private banks (Figure 19). Swiss banks' interconnectedness is modest relative to their capitalization levels precluding the spreading of cascading defaults.²⁹ Even under extreme assumptions of loss given default (LGD) = 100 percent of original exposures, there is no potential for contagion rounds.



21. The risk of spillovers between listed Swiss banks appears moderate. Market perceptions of systemic risk through equity markets have eased following crisis episodes (Figure 20). The value at risk (VaR) of financial system returns, computed as the tail of the distribution of banking system returns at the 95th percentile, controlling for macrofinancial drivers, edged down to about -15 percent of weekly returns in October 2018 from a peak of -60 percent during the global financial crisis. The marginal contribution to systemic risk from the most systemic bank during the financial crisis reached -15 percent of weekly equity returns; it has come down to 8 percent in 2018. The most relevant drivers of systemic risk are volatility, equity risk, and, more significantly, stress in peer banks.

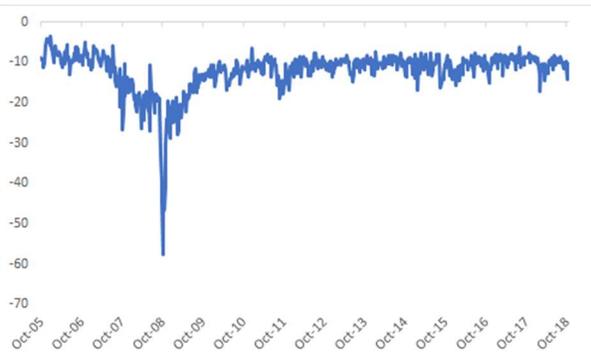
²⁹ Interconnectedness between banks and nonbank financial firms, too, is low. Only 1 percent of assets are exposures to insurance companies and pension funds, and 4 percent of liabilities are amounts due in respect to customer deposits of insurance companies and pension funds

Figure 20. Switzerland: Market-Based Contagion

The risk to the Swiss financial system, measured by market-based CoVaR has come down from crisis levels. The contribution to systemic risk of the listed Swiss banks is contained.

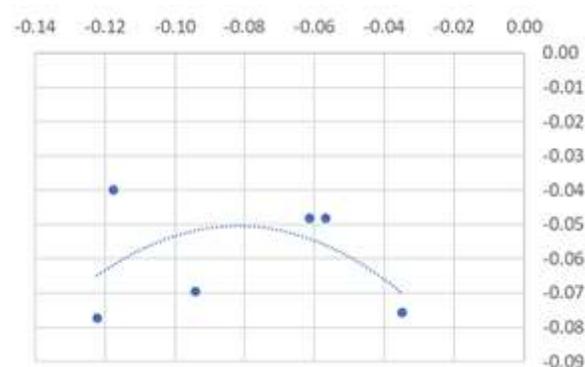
VaR returns have edged down to about -15 percent of weekly equity returns from a peak of -60 percent during the global financial crisis.

VaR
(In percent)



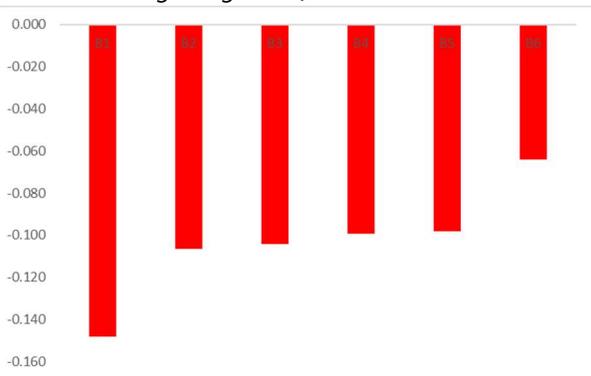
The plot shows a weak correlation between banks' individual risk marginal contribution measured by VaR (x-axis), and their contribution to systemic risk measured by Delta CoVaR (y-axis).

Delta CoVaR vs. VaR, 2018
(In percent)



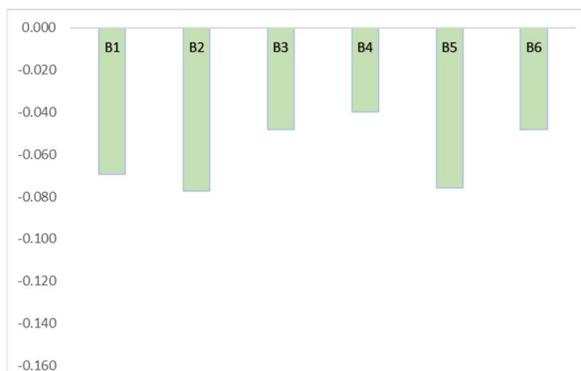
Delta CoVaR, 2007–09
(In percent)

While the average delta CoVaR of the most systemic bank (as defined in this analysis) reached -15 percent of weekly banking system returns during the global financial crisis...



Delta CoVaR, 2018
(In percent)

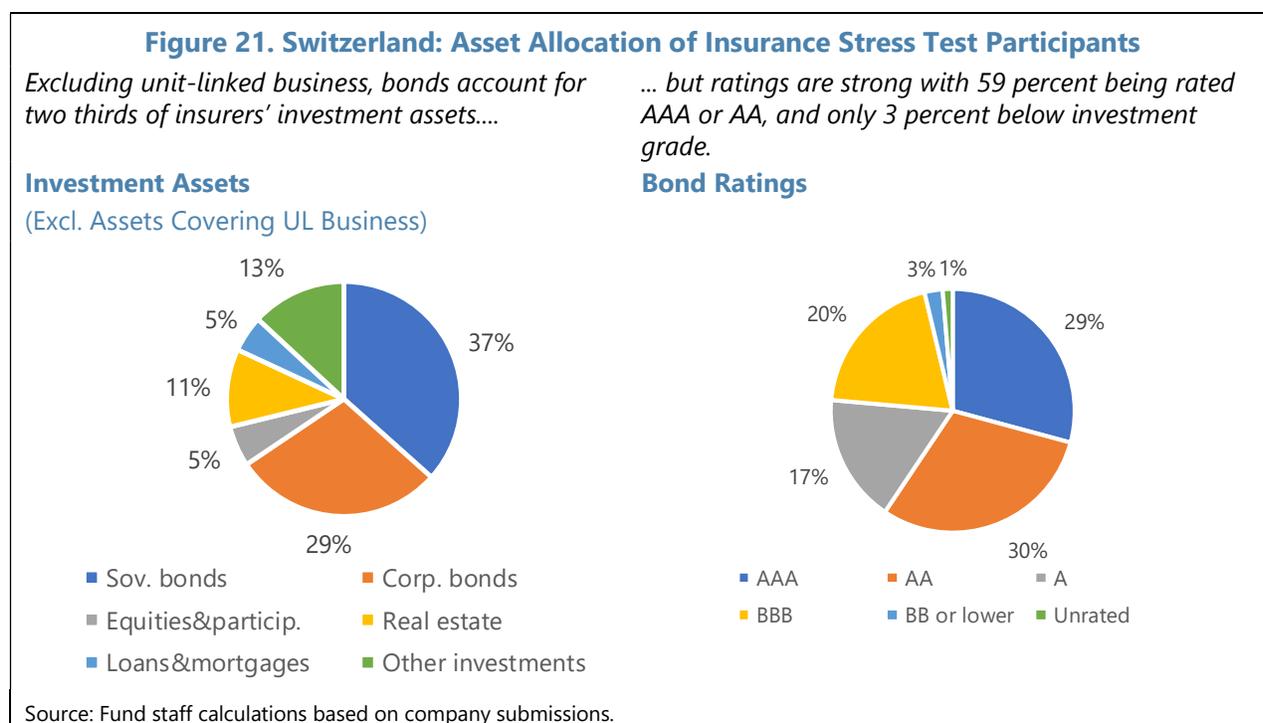
...it has edged down to -8 percent during 2018



Source: Fund Staff estimates. The sample of banks included the 6 listed Swiss banks in the 12-bank solvency sample. The analysis is based on weekly data from October 2005 through November 2018. The bottom charts show the average contribution to systemic risk during the global financial crisis.

B. Insurance System Resilience and Stress Testing

22. Six insurance groups participated in the insurance ST on a consolidated basis, ensuring a market share of 56 and 45 percent in the domestic life and non-life sector, respectively (Figure 21). Their resilience was assessed with TD and BU stress tests.³⁰ Stress tests and sensitivity analyses built on the Swiss Solvency Test (SST), and the scenarios were broadly aligned with the banking STs’ macrofinancial shocks; the insurance ST, however, focused more on market risks (Appendix V).



23. In the adverse scenario, the median SST ratio drops from 224 to 176 percent, and no company falls below the 100 percent regulatory threshold (Figure 22). The main impact stems from higher credit spreads and from the shocks to equity and real estate prices—together, the value of bonds, equity, and real estate drops by an amount equivalent to 45 percent of risk-bearing capital; interest rate and currency shocks contribute considerably less as assets and liabilities are closely matched. In general, the stress is more pronounced for life business where bond investments have longer maturities and sensitivities to spread changes are accordingly higher.

24. Swiss insurers remain profitable after stress, even when assuming no recovery in asset prices, and solvency rates start improving gradually in the year following the stress. Future investment returns are expected to decline even in the baseline scenario, illustrating the challenges from the low-yield environment. Nevertheless, solvency ratios are likely to improve in the year following the instantaneous stress, based on a solid underwriting business and favorable technical results.

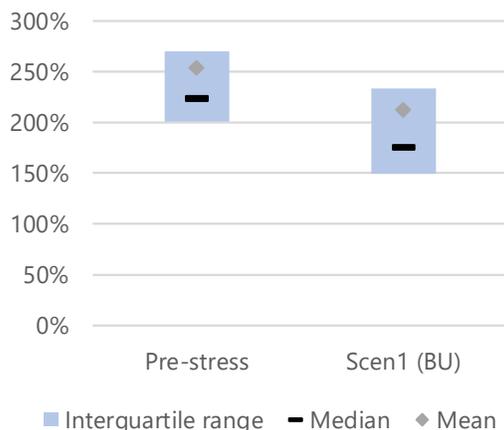
³⁰ In the absence of large bank-insurance cross holdings, the ST was conducted on a stand-alone basis.

Figure 22. Switzerland: Insurance Stress Test Results

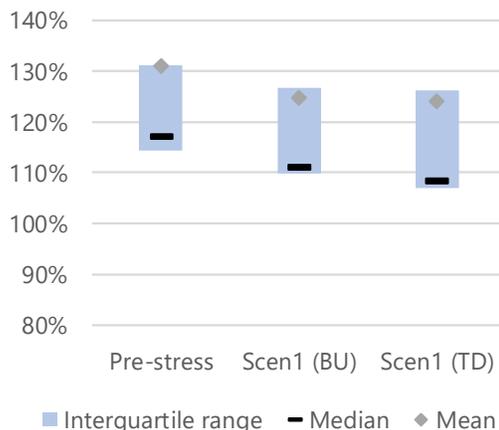
In the bottom-up test, the median SST ratio drops from 224 to 176 percent.

Median assets over liabilities drop from 117 to 111 and 108 percent, in the bottom-up and top-down test, respectively.

SST Ratio



Asset Over Liabilities

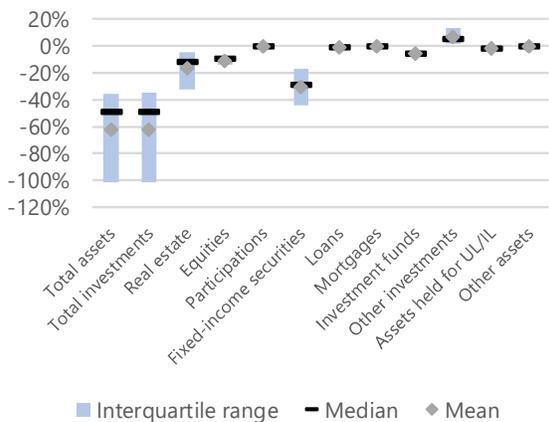


Asset price declines are most substantial for bonds, real estate and equity.

SST ratios are expected to improve slightly in the year following the instantaneous stress.

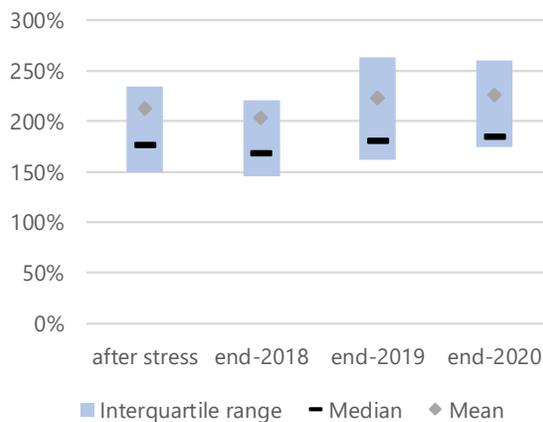
Change in Value of Assets

(BU, in percent of risk-bearing capital)



SST Ratio

(BU, expected after stress)

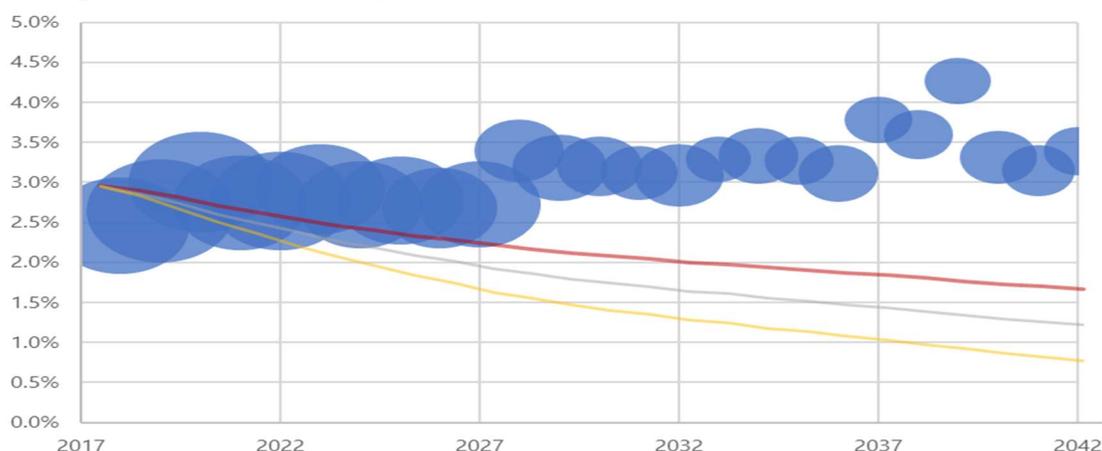


Source: Fund staff calculations based on company submissions.

25. As high-coupon bonds expire, insurers are likely to face declining investment returns (Figure 23). On aggregate, participating groups record positive spreads of investment returns over guaranteed interest rates; they are also expected to remain profitable when the adverse scenario materializes, but significant differences exist across companies: insurers that are more active in non-life and unit-linked life business are less affected and could sustain the current low-yield environment for a prolonged period; insurers with a high stock of guarantees on their policies are likely to see lower profits. The SST has improved asset-liability matching, investment horizons have lengthened, and reinvestment risks in the short term are limited.

Figure 23. Switzerland: Maturity and Average Coupon Rate of Insurers' Fixed-Income Investments

More than 50 percent of fixed-income investments will only expire after 2025 (with an average coupon rate of 3.1 percent).



Sources: Fund IMF staff calculations based on company submissions.

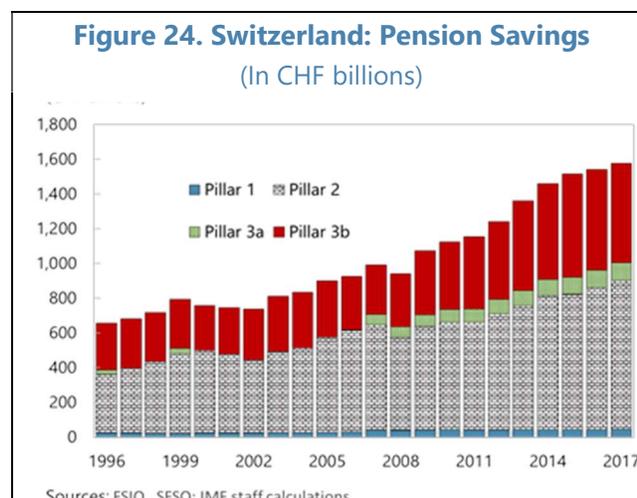
Notes: Each bubble represents the nominal value (size) and the coupon of fixed-income instruments expiring in a given year (ST participants only). The orange, grey and yellow lines show a projection of the average coupon, assuming that all maturing instruments are reinvested at a rate of 1.5, 1.0 and 0.5 percent, respectively.

26. FINMA should regularly conduct insurance sector stress tests. The tests should cover large insurers' post-stress ability to reestablish their profitability and solvency position, and results should be used to challenge companies' Own Risk and Solvency Assessment and underlying projections for future business, specifically the expectations for premium growth and investment returns.

C. The Pensions Sector

27. The large and fragmented Swiss pension fund sector faces challenges from low interest rates and public rejection of fundamental reforms. While the sector has consolidated substantially, the occupational (mandatory) pension fund sector still comprises nearly 1,700 heterogeneous entities, managing close to CHF 1 trillion of assets (149 percent of GDP). Low interest rates and higher life expectancy call for adjustments in the business model, but some of the key technical parameters are politically determined or, like the conversion rate, were subject to referendums. Consequently, pension plans can only earn the necessary technical pay-out interest rate by taking on more risks on the asset side.

28. Considering pension funds' substantial and growing size, and their exposure to real estate and the broader financial sector, their contribution to systemic risks and contagion bears careful monitoring (Figure 24). While on average the sector is adequately funded, medium-term challenges stem from the low-yield environment and aging. Pension funds can adjust their liabilities mostly only in the non-mandatory business, and as collective schemes compete for business, some keep technical parameters at levels which are beneficial to members in the short term, but less sustainable. The relative share of liquid assets and bond holdings has declined, while the share in equities, real estate, and alternative investments has risen. The three asset classes now account for about 59 percent of total assets



29. Data gaps significantly compromise market-wide horizontal and systemic risk analyses. Official statistics are available only annually and with a considerable delay; other surveys, including by OAK BV, are voluntary for pension funds. Cantonal authorities collect annual statements, but only a few allow electronic submissions. It is paramount for systemic risk monitoring that FINMA, the SNB, and OAK BV track pension funds' investment flows and search for yield, particularly in domestic real estate markets. Regular information on risk sensitivities, at least for larger pension funds, would also support horizontal analyses for the market and certain peer groups.

FINANCIAL SECTOR OVERSIGHT

30. Switzerland's financial oversight comprises three key agencies.³¹ The SNB is the monetary authority and lender of last resort, oversees systemic FMIs, and is responsible for systemic risk surveillance. FINMA is responsible for protecting the functioning of financial markets; it supervises the banking, insurance, and securities sectors, and FMIs; it is also the resolution authority for licensed entities and FMIs. The FDF prepares and executes the Federal Council's—the federal government's—financial market policies and regulations.³² Together, the three agencies are responsible for macroprudential policies.

31. The FSAP undertook a focused assessment of financial sector regulation and supervision. The assessment was covered in several technical notes—summarized below—focusing on selected principles and themes, which were agreed upon with the Swiss authorities.

³¹ The agencies are part of supervisory and resolution colleges that serve as platforms for cross-border cooperation.

³² The Federal Department of Home Affairs is responsible for policymaking in the pension sector.

A. FINMA Autonomy and Governance

32. The authorities should continue to strengthen FINMA’s autonomy, governance, and accountability. By focusing on its prudential mandate, and doing so with operational autonomy and competent staff, FINMA promotes a stable and competitive Swiss financial system. FINMA’s staffing resources should be commensurate with its broad mandate and the size of the Swiss financial system. FINMA should continue to strengthen its supervisory capacity and the use of its powers; its authority to set binding prudential requirements (FINMA ordinances) and to codify supervisory interpretations and practices (FINMA circulars) should not be weakened. In response to a parliamentary motion, the FDF is evaluating FINMA’s governance. While efforts to unify regulatory practices and procedures, such as public consultation requirements, are reasonable, these should not hinder FINMA’s flexibility and autonomy in setting out and codifying supervisory interpretations, expectations, and practices.

33. Efforts to strengthen FINMA’s governance structure should focus on the Board of Directors, which, arguably, represents the public interest and is a buffer against political influence. Key elements of such efforts should include abolishing the requirement for final approval from the Federal Council of, for example, FINMA’s annual report, personnel ordinance, and strategic goals; publicly specifying qualification requirements and selection procedures, including strengthened rules on incompatibilities and dismissals, for members of FINMA’s Board of Directors; introducing staggered mandates for Board members; and subjecting FINMA’s operational effectiveness and efficiency to audits by the Federal Audit Office.

34. While statutory protection for supervisory staff is broadly adequate, individual cases reveal vulnerabilities, which could have chilling effects on supervisory stringency. While primary liability rests with the agencies, shielding to some extent their staff, with authorization from the Department of Justice, individuals can be prosecuted for criminal offences in the execution of their mandate (there has been at least one case in recent years) and can then also be liable in civil court. Moreover, when the agencies are held liable, they can seek reimbursement from their officials and staff. The powers introduced in the aftermath of the global financial crisis are more intrusive than previously, and stakeholders have become more vocal and litigious. FINMA’s efforts to strengthen its decision-making processes to further shield individual officials and staff against personal prosecution and litigation are welcome, as are FINMA’s demonstrated ability and willingness to indemnify its (former) officials and staff. Further enhancement should be considered in clarifying procedures and criteria for (i) authorizations for personal criminal prosecution (e.g., restricting authorization grounds), and (ii) ex post reimbursement of staff for legal costs (e.g., more generous use of the FINMA’s discretion to deem individuals’ (in)actions not in gross negligence).

B. Macroprudential Policy

35. There is a need for a more agile and accountable macroprudential policy framework. Notwithstanding rising risks, as noted in the SNB’s financial stability reports, no macroprudential measures have been taken since 2014, evidencing an inaction bias. To effectively address rising risks and inaction bias, the macroprudential toolkit should be expanded with supply- and demand-side

mandated tools, and the policy decision-making process should be made more agile, with greater expectations to act. The tax deductibility of mortgage interest payments should be reviewed to mitigate incentives for mortgage debt. Higher risk weights for income-producing real estate is one option to directly target the growing risks in the investor property segment, informed by stress testing, analysis of macro and financial market data, and intensified supervision.³³ Demand side tools (e.g., LTV and amortization requirements) would be appropriate to address risks associated with affordability concerns and increase borrowers' resilience.

36. The macroprudential framework should be enhanced along several dimensions.

- **The macroprudential toolkit should be expanded.** The 2.5 percent ceiling of the sectoral CCyB should be raised and its credit-growth trigger removed or broadened. As a (credit) supply-side instrument, this tool is unsuitable to address risks associated with affordability. On the demand side, self-regulation requires agreement with the Swiss Bankers Association, which may impact timeliness and stringency. Therefore, the Federal Council should expand the toolkit with binding supply- and demand-side instruments such as risk surcharges, and LTV, debt-to-income (DTI), and debt-service-to-income limits.
- **To strengthen operational agility and to address inaction bias, a framework with the expectation to act is needed.** The SNB, under its existing financial stability mandate, would trigger the process to calibrate any current, expanded, or future tools. On a comply-or-explain basis, and after consultation with the FDF, FINMA would be expected to calibrate the tools, possibly within certain predetermined ranges (e.g., LTVs between 75–90 percent). As future circumstances require, and on a comply-or-explain basis, the SNB and FINMA should propose new macroprudential tools to the FDF. The foregoing would specify expectations—and not only possibilities—for actions by each authority for which they should be publicly accountable.
- **Transparency on systemic-risk surveillance and macroprudential policies should be increased.** A statutory requirement for regular meetings between the FDF, the SNB, and FINMA, with prescribed public communications on systemic risks and macroprudential policies would enhance transparency and support accountability. This approach could build on the existing arrangements for information exchange between said agencies; the tripartite memorandum of understanding should be revitalized with clearer operational modalities, while the agencies would continue to autonomously exercise their mandates.
- **Continued closing of data gaps.** Better data is needed on nonbanks and pension fund investment activities, on commercial real estate transactions and prices, LTV and DTI ratios, and income calculations. Enhanced cooperation among regulators is needed to monitor risks from the pension sector.

³³ The authorities are considering to advance the implementation of the Basel III regulation for higher risk weights on income-producing real estate with LTV ratios above 66 percent.

C. Banking

37. **The authorities have taken steps to address key concerns raised during the 2014**

FSAP.³⁴ FINMA further clarified its expectations for risk management and corporate governance, including for the roles and responsibilities of the boards and senior management in ensuring an effective risk management framework and associated internal controls. Guidance was strengthened on a range of practices, providing greater detail and clarity on expectations for firms and supervisory auditors in risk areas. The planned refinements and improvements to strengthen supervisory effectiveness that FINMA introduced in January 2019 are welcome. This includes implementing a more focused regime for supervisory auditors, complemented with other enhancements to supervision practices.

38. **While there are benefits to using external auditors for a small supervisor responsible for a large and diverse sector, there are risks to manage.**

About two-thirds of the supervision program is carried out by external auditors and the supervisory audits are overly broad. Progress has been made in the use of the forward-looking and risk-focused approach; however, FINMA should itself conduct more risk-based on-site inspections and more can be done to rebalance and improve the effectiveness of the supervisory audit system.³⁵ Coverage at large banks can be reduced where internal audit should do much of this work under the Board's responsibility. Supervisory audits should focus on key areas, resulting in 'positive audit-level opinions' on critical risk management and control practices, rather than the lower standard of 'critical assessment.' Moreover, arrangements under which the banks contract and pay the supervisory auditors, who typically also provide consultancy and financial audit services, raise conflict of interest concerns that may affect supervisory objectivity. FINMA—rather than banks—should contract and pay for the external auditors' supervisory work.

39. **Further measures are needed to address material risk management and control**

weaknesses. In the absence of an explicit legal basis for a thorough assessment of banks' boards and senior management, FINMA is constrained in holding responsible parties accountable. FINMA requires Pillar 2 add-ons to incentivize the largest banks to address control weaknesses. However, while these add-ons can be a useful tool, they cannot replace rapid remedial action by banks to address the risk management and control weaknesses that necessitate the add-on in the first place. FINMA should assess banks' boards and senior management effectiveness against their corporate governance responsibilities. Moreover, such governance assessments of boards and senior management should directly enable FINMA to impose restrictions (such as, on capital distributions). All of this would aim to incentivize banks to take the appropriate remedial action to address material risk management and control weaknesses.

³⁴ Switzerland is a member of the Basel Committee on Banking Supervision and follows Basel III.

³⁵ Article 24(4) of the FINMA Act provides that "the Federal Council regulates the main aspects of the content and conduct of the audit and the form of the report."

40. A ‘post-stress’ leverage ratio requirement should be considered to strengthen the regulatory toolkit. It is commonly accepted that the combined use of an internal models-based approach for calculating RWAs and a leverage ratio serving as a non-risk-sensitive backstop incentivizes banks to underestimate their risks. This puts a premium on strong oversight of banks’ internal models for calculating risk-based capital requirements and the use of other methods, such as stress testing and scenario analysis, to ensure comprehensive capture of risk exposures—particularly risks that internal modeling approaches may not captured well. Consistent with the authorities’ prudent regulatory approach, a ‘post-stress’ leverage ratio requirement would introduce risk sensitivity under stress into the leverage ratio while maintaining total assets as the denominator.

41. FINMA should continue to increase its understanding of the two G-SIBs’ large foreign operations in the U.S., the U.K., and Asia. FINMA has significantly increased its cooperation with U.S. and U.K. supervisors. Additionally, by hosting supervisory colleges it has regular formal discussions with host-country supervisors. The two G-SIBs’ large foreign operations increase the importance of, and challenges for, FINMA’s understanding of these operations and their risks. FINMA should allocate adequate resources to the supervision of the G-SIBs consolidated operations.

D. Insurance

42. The regulatory framework for the insurance sector is highly sophisticated, but oversight of operational risk management and conduct regulation should be strengthened. Globally, Switzerland has one of the most developed insurance markets, and it is home to large internationally active insurance groups. FINMA’s supervisory approach is forward-looking and risk-based. FINMA should enhance the analytical framework for assessing operational risks and prescribe capital add-ons if needed. Furthermore, FINMA should have more legal powers and resources for the supervision of insurance intermediaries and business conduct of insurers. Furthermore, a resolution regime for insurance companies should be established.

43. The solvency regime is one of the most developed in the world. The SST has contributed to a proliferation of modern risk management practices across the sector. Nevertheless, more key SST features should be enshrined in binding ordinances and operational risks should be monitored more closely. While originally the SST relied highly on insurance companies developing their own internal models for calculating their capital requirements, a revision of the Insurance Supervision Ordinance in 2015 led to a promotion of standard models that were subsequently developed by FINMA in consultation with the insurance sector; now, only a few large (or complex) companies use an internal model.

44. A new law is expected to strengthen the legal framework for conduct regulation and policyholder protection. The 2014 FSAP recommended articulating specific rules on business conduct, noting that supervision of tied agents was only indirectly performed through insurers, and that there were no on-going reporting requirements for intermediaries. So far, only marginal improvements were made: a revision of the Insurance Supervision Act will not enter into force before 2021–22. The draft act foresees a more stringent supervision of insurance intermediaries, more transparency towards policyholders, and a specific restructuring law for insurance companies.

45. The authorities are considering a special restructuring regime for insurers in the event of a crisis. The regime would allow FINMA, for example, to transfer insurance portfolios, restructure the insurer's debt and equity, amend insurance contracts, and defer the termination of reinsurance contracts, when an insurer becomes "over-indebted" or has "major liquidity problems." Although insurance resolution is subject to ongoing regulatory developments at the international level, several emerging policy positions could guide the development of the insurance resolution framework. The authorities may consider, for example, enabling FINMA to exercise resolution powers without requiring the consent of interested parties, incorporating provisions on run-off, or envisaging the possibility of transferring reinsurance contracts associated with the transferred policies in resolution. Moreover, the proposed regime has not been designed to deal with the failure of a systemically significant insurer; further changes would be needed to deal with the resolution of such an insurer.

E. Financial Market Infrastructure

46. While systemically important FMIs in Switzerland are generally well developed and subject to close supervision and oversight, their internal governance and crisis management arrangements require further work. Swiss FMIs appear to generally observe the Principles for Financial Market Infrastructures (PFMI). SIX Group AG (SIX Group) operates in a competitive environment, and it is important that the systemically important FMIs it operates have strong internal governance arrangements that are sufficiently independent from the commercial incentives of the group to support sound risk management. While FMI supervision and oversight largely meet the Responsibilities set out in the PFMI, FINMA should dedicate more resources to FMIs. The authorities and SIX Group should also strengthen FMI crisis management arrangements.

47. A revised regulatory framework for FMIs came into effect in Switzerland in January 2016. FINMA has responsibility for supervision of FMIs, and the SNB has responsibility for oversight of systemically important FMIs. There is close cooperation between FINMA and the SNB where their responsibilities overlap, and the authorities have been effective in inducing change in several areas. However, resources at FINMA dedicated to FMI supervision, and to FMI recovery and resolution, should be increased to ensure that FINMA can fulfil its mandate in these areas.

48. The independence of the governance arrangements of SIX x-clear and SIX SIS should be improved, and the effectiveness of the revised SIX Interbank Clearing governance arrangements should be monitored. This will ensure that a high priority is placed on sound risk management and financial stability considerations. Competitive pressures weigh on incentives to implement best practice risk management. FMI risk governance arrangements should give sufficient attention to the risk management of the systemically important FMIs and decisions about these matters should be sufficiently independent from broader business decisions of SIX Group.

49. FMI crisis management work should continue to be a priority. The systemically important SIX Group FMIs have implemented recovery plans, broadly covering the issues considered in pertinent international guidance. Further work is required to ensure that the recovery arrangements effectively support the continuity of the FMIs' critical services, even in extreme scenarios. FMI resolution planning is at an early stage in Switzerland. FINMA—in consultation with

the SNB—should progress expeditiously with the development of FMI resolution plans. In 2018, FINMA established a crisis management group (CMG) for SIX x-clear. The authorities are strongly encouraged to complete their broader ongoing work to develop crisis management cooperation plans among Swiss authorities and with relevant foreign authorities.

F. Asset Management

50. The fund market in Switzerland has grown 10 percent annually since 2013, reaching 160 percent of GDP at end-2017. Leverage levels are low and stable for equity and bond funds, and the assets under management of money market funds (MMFs) increased slightly.³⁶ Official data is incomplete, and the market could be twice as large.

51. Since the 2014 FSAP, FINMA has enhanced the intensity of supervision of the asset management and the fund industry, but its analytical capacity is lagging. FINMA utilizes a range of supervisory tools, has introduced a new “off-site inspections” program, has significantly increased on-site inspections, and has enhanced its enforcement policy. These are welcome developments and FINMA should continue to enhance the cooperation with foreign supervisors to monitor and supervise more effectively other internationally active asset managers. FINMA should update its IT systems and address data gaps to improve its analytical capacity; it should conduct industry-wide liquidity stress tests.

52. Concentration risk should be better monitored and managed. While funds are subject to concentration limits for their investments, higher limits apply to concentration risks through certain derivative transactions and counterparty credit risk. Some risks (such as concentration of exchange-traded funds’ swap counterparties) warrant heightened supervision to prevent undue concentration.

53. FINMA should have the power to impose administrative fines. While FINMA can seize profits resulting from serious regulatory violations and revoke the violator’s license, FINMA cannot impose administrative fines. This limitation should be remedied, because it could pose important challenges to FINMA, particularly when in 2020 it will start indirectly supervising a considerable number of independent asset managers. FINMA should use its existing enforcement tools more actively and comprehensively disclose individual enforcement actions and license revocations.

G. Fintech and Crypto-Assets

54. Although the current size of fintech activities may not be large enough to cause systemic risk, reputation and contagion risk should not be underestimated. While the number of banks engaged in crypto-related activities is small, the growth size and speed of fintech services are significant in some banks. This needs careful monitoring and more resources. If material failure and loss of confidence should occur in the fintech sector, this might affect the reputation of FINMA and the government, particularly when this coincides with financial market turmoil.

³⁶ Constant net asset value per share MMFs (C-NAV MMFs) are not allowed in Switzerland, although Swiss asset managers are managing some foreign domiciled C-NAV MMFs.

Legislative Initiatives

55. The Swiss authorities are at the global forefront of promoting blockchain and DLT by providing legal clarity and certainty. A recent Federal Council report proposes legislative changes to embed blockchain technology and DLT into existing laws. The authorities describe the initiative’s approach as underpinned by the principle of “technology-neutrality,” with some exceptions. In departing from this principle and creating a new blockchain and DLT infrastructure category, the authorities should identify risks, including regarding new types of misconduct, and introduce appropriate legal safeguards to maintain a safe and stable Swiss financial system. Accordingly, legislative amendments for the new blockchain and DLT infrastructure category should include clear and transparent eligibility standards and requirements to ensure operational safety and stability.

56. Legislative reform should preserve a level playing field. Legislative initiatives for market signaling purposes could have unintended consequences for the legal system’s integrity and financial sector reputation (e.g., facilitating market applications of poorly understood technologies and nurturing financial sector dependencies on protocols with vulnerabilities that are not initially apparent). Moreover, the initiatives’ technology-centric focus on blockchain and DLT, and removing legal obstacles to their development in particular, may inadvertently introduce market distortions and misallocate resources to untested projects. The broader goal to exploit the opportunities offered by digitalization, might be more effectively achieved by an approach to enabling innovation that is less tailored to the particular workings of blockchain and DLT.

57. The authorities should continue to engage with a diversity of stakeholders, conduct more comprehensive risk and benefit analysis, and tailor the relevant laws and regulations proportionate to the fintech activities’ evolving risk profile. In drafting targeted legislative amendments, the authorities should consider how blockchain and DLT activities may alter the structure of financial markets. The report’s proposed amendments could accelerate such change. The traditional approach under existing laws and regulations, which focus on traditional market infrastructures, is not always well suited for decentralized blockchain and DLT models. This would help to ensure coherent legal treatment, improve investor protection, preserve the Swiss financial sector’s reputation, and contribute to mitigating possible systemic risks.

Regulation and Supervision

58. Introducing new reporting requirements on and allocating additional staffing resources to fintech activities would help the authorities develop better policies and more effectively mitigate risks. Several initiatives were introduced without effective reporting requirements; the authorities rely heavily on anecdotal evidence. For better policies and risk mitigation, FINMA should collect reliable data on material activities and enhance its monitoring and analytical capacity, which would require additional staffing resources.

59. The authorities should remove regulatory gaps, particularly when these diminish retail investor protection. For example, crypto-asset related service providers (such as crypto brokers) are not always subject to prudential or market conduct regulations—except for anti-money

laundering and combating the financing of terrorism (AML/CFT) regulations. Moreover, banks do not need FINMA approval for crypto-related services per se. To further enhance retail investor protection, the authorities should particularly apply prudential requirements on crypto brokers who trade payment tokens, and market conduct requirements for tradable payment tokens.

H. Financial Integrity

60. Despite good progress in adopting AML/CFT recommendations, an assessment by the Financial Action Task Force (FATF) in 2016 found that efforts should continue. The assessment evaluated Switzerland's AML/CFT regime as technically robust, with good results overall.

Nonetheless, building on a 2015 national risk assessment by Swiss authorities, the FATF assessment noted that Switzerland was exposed to the laundering of assets resulting from offenses committed abroad, with highest risk identified particularly at the level of private banks, independent asset managers, fiduciaries, lawyers, and notaries. Remaining key deficiencies included strengthening the authorities' control of the obligation to report suspicious transactions, particularly for financial institutions; ensuring that sanctions are commensurate with the seriousness of misconduct; enhancing international cooperation.

61. Since the 2016 assessment, the authorities have taken several steps to address the deficiencies and to proactively mitigate ML/TF risks emanating from the fintech sector.

Notably, they strengthened requirements for wire transfers and higher risk countries, and applied AML/CFT regulations to a range of virtual asset service providers. The authorities assessed the risks emanating from financial intermediaries and fiduciaries, and crypto-based activities. The authorities should expedite legislation on strengthening international cooperation. They should also continue to adjust the AML/CFT framework to FATF developments on fintech.

FINANCIAL SAFETY NET AND CRISIS MANAGEMENT

A. Early Intervention and Recovery Planning

62. FINMA enjoys a broad range of enforcement and early intervention powers to deal with problem banks but lacks an explicit early intervention framework. A written framework would enhance timely intervention, while adhering to the principles of proportionality and equal treatment under the law. Furthermore, there is no formal process in place describing which, when, and how relevant information must be exchanged between pertinent divisions. The operational modalities thereof should be documented to enhance timely recovery and resolution interventions.

63. FINMA should allocate greater resources to recovery planning. Recovery planning and measures are critical in preventing banks from entering resolution. Only the five SIBs are required to maintain recovery plans and FINMA has yet to outline its general expectations for recovery planning. FINMA should establish guidance for recovery planning and require all banks to prepare recovery plans. The guidance should ensure that the impact of scenarios for recovery planning is consistent across banks while the scenarios are firm specific. The recovery planning requirement should be expanded to all banks, prioritizing banks with insured deposits higher than the CHF 6 billion DIS cap.

B. Bank Resolution Powers and Planning

64. FINMA’s resolution powers, including liquidation, are closely aligned with the FSB Key Attributes. The authorities have addressed key 2014 FSAP concerns, including requiring that bail-inable bonds be issued in Switzerland and governed by Swiss law. FINMA now also has explicit statutory powers to write down or convert debt in resolution and to stay early termination rights.

65. FINMA has spent considerable resources to operationalize the resolution regime, focusing on the two G-SIBs, but more needs to be done to enhance resolvability. FINMA has yet to establish the G-SIBs’ resolution plans and remove critical obstacles to resolvability, including: funding in resolution; the cross-border transferability of group surplus liquidity and collateral; and timely and sufficient liquidity support during resolution. The CMGs’ roadmaps to remove resolvability impediments by end-2021 should be accelerated. To enhance resolvability, FINMA should have the power to require changes in banks’ legal and business structure or operations.

66. Resolution planning should be enhanced and expanded to all banks that could become systemic under certain circumstances. FINMA should further expand resolution planning to banks with insured deposits higher than the CHF 6 billion DIS cap.³⁷ Resolution planning for these banks should be formalized, and they should be legally required to provide FINMA all pertinent information.

C. Deposit Insurance

67. The Swiss DIS lacks critical elements of the IADI Core Principles and best international practice; changes that the authorities are preparing will not remedy this. The DIS is designed to rely on the DIA (esisuisse) only for a form of back-up funding when a failed bank’s liquidity is insufficient to reimburse insured depositors. The liquidator is responsible for the reimbursement process—usually a key DIA competence. esisuisse is a banking sector self-regulatory body run by active bankers with a narrow ex-post funded pay-box mandate; it cannot be used to finance resolution measures, which would benefit the public and esisuisse as, for example, a transfer of deposits is more cost effective than a payout and allows depositors to have uninterrupted access to their deposits. The system does not have a public backstop; payout timeframes are not defined by law. The combination of an ex-post funding mechanism, the statutory CHF 6 billion cap on banks’ joint contribution for deposit insurance, and the lack of a formal public backstop could leave doubts that the DIS would always be able to fulfill its mandate, leaving taxpayers to pay what is required beyond the CHF 6 billion cap. Without a thorough reform, the DIS cannot effectively contribute to the financial safety net and the DIA cannot be integrated into the crisis management framework.

68. The authorities should include the following in the ongoing DIS reform proposals:³⁸

³⁷ Eleven Swiss banks have insured deposits of more than CHF 6 billion. Only six of them are subject to some form of resolution planning: full-fledged planning for five SIB’s and simplified planning for one non-SIB.

³⁸ In 2010, after public consultation, the government withdrew a reform proposal including a nationalized DIS with an ex-ante fund, back-up funding from the government, and a CHF 10 billion target level.

- Make the DIA a public-sector entity without any active bankers participating in its board.
- Allow the DIS to fund resolution measures, subject to safeguards (least-cost test).
- Abolish the CHF 6 billion ceiling and introduce full ex-ante funding with a target level based on the simultaneous failure of several midsize banks,³⁹ supplemented by a government back-up.
- Formalize a seven-day payout timeframe starting from license revocation.
- Require banks to produce a single customer view on request, subject to regular audits and tests.

D. Resolution Funding and ELA

69. An ex post funding mechanism should support the resolution regime. While allowing the DIS to fund resolution measures would provide a new funding source, this will be limited and take time to build up. There should be a legal mechanism to recover from banks any public funding of resolution measures.

70. The SNB should issue policies and procedures supporting its authority to provide ELA to any bank that is considered systemic and viable under certain circumstances. The SNB has undertaken significant ELA preparations with the five SIBs. The SNB can provide ELA to any other group of banks that the SNB deems systemic—a determination that it is able to make quickly. However, public information on ELA requirements and procedures is sparse. The SNB should issue ELA guidance to help non-SIBs prepare for ELA that should remain at the SNB’s discretion.

E. Contingency Planning

71. Systemwide crisis preparedness must be advanced. While it may be difficult to predict the source of any future crisis, official responses are typically limited to a defined catalogue of actions, such as recovery measures, ELA, and resolution. Policy and operational choices for such actions should be laid down in a national contingency plan, ensuring complementarity of agency-specific plans and including a communication plan, regularly tested with simulation exercises.

72. Although the regime does not explicitly establish arrangements for exceptional support, the Federal Council could use constitutional emergency powers during a financial crisis. The Constitution authorizes the Federal Council to issue ordinances for extraordinary measures. These could include official support for banks to preserve financial stability. In 2008, the Federal Council used these powers to recapitalize UBS.

³⁹ For purposes of this note, mid-size banks are the 10–15 banks—out of the over 300 banks in Switzerland—just below the level of banks with a SIB designation.

Table 2. Switzerland: Selected Economic Indicators (2016–24)

(In percent)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
			Staff projections						
Real GDP (percent change)	1.6	1.7	2.5	1.1	1.6	1.6	1.6	1.6	1.6
Total domestic demand	0.4	1.6	-0.1	0.9	1.1	1.1	1.7	1.3	1.3
Private consumption	1.5	1.2	1.0	1.1	1.2	1.1	1.0	1.1	1.1
Public consumption	1.2	0.9	1.0	1.1	1.0	1.0	1.0	1.0	1.0
Gross fixed investment	3.5	3.4	2.1	0.4	0.5	0.7	3.2	1.9	1.6
Inventory accumulation 1/	-1.5	-0.2	-1.2	0.0	0.0	0.0	0.0	0.0	0.0
Foreign balance 1/	1.2	0.3	2.6	0.4	0.7	0.7	0.2	0.5	0.5
Nominal GDP (billions of Swiss francs)	660.5	668.7	689.8	706.0	723.7	742.1	761.3	781.5	802.1
Savings and investment (percent of GDP)									
Gross national saving	32.4	30.1	33.3	33.3	33.3	33.3	33.3	33.3	33.3
Gross domestic investment	22.9	23.4	23.1	23.6	23.5	23.5	23.5	23.6	23.6
Current account balance	9.4	6.7	10.2	9.8	9.8	9.8	9.8	9.8	9.8
Prices and incomes (percent change)									
GDP deflator	-0.6	-0.4	0.6	1.2	0.9	0.9	1.0	1.0	1.0
Consumer price index (period average)	-0.4	0.5	0.9	0.4	0.7	0.9	1.0	1.0	1.0
Consumer price index (end of period)	0.0	0.9	0.7	0.3	1.2	0.6	1.4	0.6	0.5
Nominal hourly earnings	0.7	0.4	0.5	1.1	1.0	1.0	1.0	1.0	1.0
Unit labor costs (total economy)	-0.5	-0.1	-2.3	0.2	0.3	0.6	0.6	0.6	0.6
Employment and slack measures									
Unemployment rate (in percent)	3.3	3.2	2.6	2.8	2.8	2.8	2.8	2.7	2.7
Output gap (in percent of potential)	-0.3	-0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Capacity utilization	73.9	74.6	73.8	...	...	...	...	...	...
Potential output growth	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6
General government finances (percent of GDP)									
Revenue	33.3	34.2	33.7	33.6	32.8	32.8	32.8	32.8	32.8
Expenditure	33.0	33.0	32.4	32.6	32.4	32.4	32.4	32.4	32.4
Balance	0.4	1.2	1.3	1.0	0.4	0.4	0.4	0.4	0.4
Cyclically adjusted balance	0.5	1.3	1.1	0.9	0.4	0.4	0.4	0.4	0.4
Gross debt 2/	41.8	42.7	40.5	38.7	37.3	36.0	34.7	33.4	32.1
Monetary and credit (percent change, average)									
Broad money (M3)	3.0	3.5	3.1	...	...	...	...	...	...
Domestic credit, non-financial	3.1	2.7	4.0	...	...	...	...	...	...
Three-month SFr LIBOR	-0.7	-0.7	-0.7	...	...	...	...	...	...
Yield on government bonds (7-year)	-0.6	-0.3	-0.2	...	...	...	...	...	...
Exchange rates (levels)									
Swiss francs per U.S. dollar (annual average)	1.0	1.0	1.0	...	...	...	...	...	...
Swiss francs per euro (annual average)	1.1	1.1	1.2	...	...	...	...	...	...
Nominal effective rate (avg., 2000=100)	123.3	122.6	119.6	...	...	...	...	...	...
Real effective rate (avg., 2000=100) 3/	110.7	108.8	105.0	...	...	...	...	...	...

Sources: Haver Analytics; IMF's Information Notice System; Swiss National Bank; and IMF Staff estimates.

1/ Contribution to growth. Inventory accumulation also includes statistical discrepancies and net acquisitions of valuables.

2/ Reflects new GFSM 2001 methodology, which values debt at market prices. Calculated as the sum of Federal, Cantonal, Municipal and Social security gross debts.

3/ Based on relative consumer prices.

Table 3. Switzerland: Financial Soundness Indicators of the Banking Sector (2010–18)

(In percent)

	2010	2011	2012	2013	2014	2015	2016	2017	June 2018
Banks									
Capital adequacy									
Regulatory capital as percent of risk-weighted assets ¹	17.1	16.6	16.9	18.7	16.6	17.0	16.1	18.6	18.5
Regulatory Tier I capital as percent of risk-weighted assets ¹	15.4	15.4	15.7	17.8	16.1	16.6	15.7	18.2	18.2
Non-performing loans net of provisions as percent of tier I capital ²	6.0	5.4	5.0	4.5	3.7	3.8	3.9	3	2.5
Asset quality and exposure									
Non-performing loans as percent of gross loans ²	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.7
Sectoral distribution of bank credit to the private sector (percent) ³									
Households	68.3	68.8	68.4	68.0	68.6	69.5	69.4	69.4	69
Agriculture and food industry	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1
Industry and manufacturing	3.0	2.9	2.7	2.4	2.1	1.9	1.8	1.9	2
Construction	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Retail	3.2	3.1	3.0	2.8	2.9	2.6	2.8	2.6	2.7
Hotels and restaurants / Hospitality sector	1.1	1.1	1.0	0.9	0.9	0.9	0.9	0.9	0.8
Transport and communications	0.9	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Other financial activities	0.5	0.5	0.6	0.8	0.7	0.7	0.5	0.6	0.7
Insurance sector	0.6	0.4	0.6	0.6	0.6	0.4	0.6	0.7	0.7
Commercial real estate, IT, R&T	12.1	12.4	12.8	13.3	13.6	13.6	13.8	14	14
Public administration (excluding social security)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Education	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Healthcare and social services	1.1	1.1	1.2	1.3	1.3	1.4	1.4	1.4	1.4
Other collective and personal services	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.9
Other ⁴	5.3	5.0	5.0	5.3	4.7	4.4	4.3	4	4.2
Earnings and profitability									
Gross profits as percent of average assets (ROAA)	0.3	0.5	0.1	0.3	0.1	0.2	0.3	0.3	0.3
Gross profits as percent of average equity capital (ROAE)	4.3	6.9	2.1	3.6	2.1	2.9	3.2	4.5	3.4
Net interest income as percent of gross income	27.9	31.1	31.6	32.3	34.5	34.1	34.5	34.2	31.2
Non-interest expenses as percent of gross income	73.3	72.0	73.7	71.6	69.4	72.9	76.6	74	66.8
Liquidity									
Liquid assets as percent of total assets ⁵	10.3	15.5	17.0	12.5	11.9	...	...	...
Liquid assets as percent of short-term liabilities ⁶	23.3	33.9	35.4	47.4	47.4	140.3	152.7	150.9	155.9
Net long position in foreign exchange as a percent of capital	-36.7	-56.9	-44.5	-38.8	-45.6	-72.8	-95.1	-65.3	-73.7

Source: Swiss National Bank.

¹ Based on parent company consolidation. This consolidation basis equals the CDBI approach defined in FSI compilation guide plus foreign bank branches operating in Switzerland, and minus overseas deposit-taking subsidiaries.

² From 2007 onwards broader criteria pursuant to national accounting regulations (FINMA-RS 08/2 Art. 228b) has been applied for defining non-performing loans.

³ As percent of total credit to the private sector.

⁴ Includes mining and extraction, production and distribution of electricity, natural gas and water, financial intermediation, social security, and ex-territorial bodies and organizations.

⁵ In 2015, the indicator was redefined in line with Basel III regulations, leading to a series break. The 2015 value under the new definition is not yet available.

⁶ The indicator "liquid assets as percent of short-term liabilities" has been replaced by the ratio of high quality liquid assets to net cash outflows. This leads to a break between 2014 and 2015.

* These ratios were calculated from numbers that originate from the Basel I as well as from the Basel II approach. Therefore, interpretation must be done carefully since they can vary within +/- 10%.

Table 4. Switzerland: Financial Soundness Indicators of the Insurance Sector (2013–17)
(In percent)

	2013	2014	2015	2016	2017
Capital adequacy					
Shareholder equity and reserves / total assets - life	7.7	...	7.4	...	7.3
Shareholder equity and reserves / total assets - non-life	29.0	...	29.2	...	25.7
Shareholder equity and reserves / total assets - reinsurance	24.9	...	26.6	...	17.8
Solvency coverage ratio (SST) - life	153	149	147	160	178
Solvency coverage ratio (SST) - non-life	203	191	201	228	231
Solvency coverage ratio (SST) - reinsurance	219	204	199	217	220
Profitability					
Growth in gross written premiums - life	...	-0.7	-0.4	-5.7	-3.7
Growth in gross written premiums - non-life	...	-2.1	-2.7	1.9	2.7
Growth in gross written premiums - non-life	...	6.5	4.2	26.7	-3.7
Loss ratio (net paid claims / net premiums) - non-life	56.6	59.3	60.8	57.3	58.8
Loss ratio (net paid claims / net premiums) - reinsurance	66.9	61.7	60.6	64.6	75.4
Expense ratio (net expenses / net premiums) - non-life	24.9	27.5	29.2	28.9	29.3
Expense ratio (net expenses / net premiums) - reinsurance	25.2	30.0	31.6	33.7	35.8
Combined ratio (loss ratio plus expense ratio) - non-life	81.5	86.8	90.0	86.2	88.1
Combined ratio (loss ratio plus expense ratio) - reinsurance	92.0	91.7	92.2	98.3	111.2
Return on equity - life	9.9	7.8	6.6	6.7	8.5
Return on equity - non-life	19.6	18.3	14.9	17.8	13.7
Return on equity - reinsurance	15.7	16.3	27.8	9.0	2.4
Asset quality					
Bonds / total investments excl. unit-linked	46.3	...	44.2	...	40.4
Stocks / total investments excl. unit-linked	3.0	...	3.8	...	4.0
Investment yield - life	3.3	3.3	3.1	2.9	2.5
Liquidity					
Liquid assets / total investments excl. unit-linked ¹	53.8	...	53.4	...	50.8
Reinsurance					
Risk retention ratio (net premium / gross premium) - life	99.1	99.2	99.1	98.8	98.6
Risk retention ratio (net premium / gross premium) - non-life	87.5	87.7	87.2	88.8	87.3

Source: IMF staff calculations based on FINMA data.

Notes: Reinsurance includes captives.

¹ Liquid assets include bonds, equity, cash and deposits, and investment funds.

Appendix I. Implementation Status of 2014 FSAP Recommendations

Recommendation	Implementation Status
<i>Short term</i>	
Impose a leverage ratio on the banks that is tougher than international minima.	<p>Implemented</p> <p>The amended TBTF regime entered into force on July 1, 2016 and has a leverage ratio calibration which, once fully phased in, will be among the highest in the world. The going-concern leverage ratio requirement will be 5 percent (with at least 3.5 percent CET1) for the two G-SIBs, and 4.5 to 4.625 percent (with a minimum of 3.0 to 3.125 percent CET1) for the three D-SIBs. The gone concern leverage ratio requirement will also be 5 percent for the two G-SIBs, of which 2 percent will be subject to a rebate depending on their demonstrated progress in improving their resolvability beyond the required minimum. The gone concern requirement for D-SIBs came into force on January 1, 2019.</p>
Remain alert to the build-up of risks in domestic real estate and mortgage markets. Fully enforce self-regulation and consider further raising the countercyclical capital buffer and introducing additional tools (e.g., DTI and LTV limits).	<p>Partially Implemented</p> <p>The authorities have continued to enforce self-regulation and have required banks to take the following measures: (1) stricter amortization requirements; (2) use of second incomes for financial sustainability evaluation; and (3) valuation of properties for mortgages. Further, FINMA conducted on-site supervisory reviews focusing on investment properties, carried out mortgage stress tests of banks, and followed up on any unusual findings.</p> <p>The sectoral CCyB is utilized at close to maximum capacity. In the absence of demand-side macroprudential tools, no further macroprudential measures were taken, despite the SNB's call for measures considering the growing imbalances in the real estate market and increasing risks associated with affordability.</p>
Bring FMIs into compliance with new international principles and establish crisis management arrangements between the authorities of FMIs.	<p>Partially Implemented</p> <p>With the revision of the National Bank Ordinance in July 2013, the relevant international principles for FMIs were largely incorporated in the Swiss regulatory framework. The relevant provisions of the National Bank Ordinance were later transferred to the Financial Market Infrastructure Act and remaining regulatory gaps have been closed with the entry into force of this new act (and related ordinances) on January 1, 2016. The Financial Market Infrastructure Act largely implements the PFMIs and has been recognized as equivalent with EU central counterparty regulation (EMIR) by the EU Commission.</p>

Recommendation	Implementation Status
	FINMA and SNB are discussing arrangements to ensure effective coordination and cooperation between the authorities and FMIs in FMI-specific crisis scenarios.
Establish transparency in the financial sector as a core element of the Swiss “brand,” in particular through heightening bank disclosure requirements, including as regards capital weighting and providing data for adequate risk analysis.	<p>Partially Implemented</p> <p>On January 1, 2016, FINMA Circular 2016/1 implemented the Basel Committee on Banking Supervision’s revised 2015 Pillar 3 disclosure requirements, strengthening disclosure requirements for all institutions. In 2017, FINMA revised the capital adequacy and liquidity disclosure requirements for banks, including the disclosure requirements for corporate governance.</p> <p>Furthermore, FINMA has motivated both G-SIBs to improve their disclosure on risk weighting. While qualitative disclosures have improved, quantitative disclosures of the difference between internal and standard model RWAs have yet to take place.</p> <p>Regarding insurers, the new Circular 2016/2 “Disclosure” requires standardized disclosure, providing better comparable and more transparent information to the market and policyholders.</p>
Overhaul the deposit insurance scheme: make its provisions more transparent; reform its governance; and build-up dedicated ex ante funding with a back-up line of support. Make deposit insurance funds available to finance resolution measures on a least-cost basis.	<p>Not Implemented</p> <p>A review of the Swiss DIS is under way. There are no plans to make DIS funds available to finance resolution measures (on a least-cost basis).</p>
Issue guidance on the cantonal banks’ governance, based on their best practice, including reducing political interconnectedness. Issue guidance on guarantees for cantonal banks to enhance transparency and create a level playing field, both across the cantonal banks and with the rest of the banking sector.	<p>Partially Implemented</p> <p>On July 1, 2017, the FINMA Circular 2017/1 “Corporate Governance—Banks” entered into force, streamlining the regulatory framework on corporate governance for banks, securities dealers, financial groups and (bank or securities dealer-dominated) conglomerates.</p> <p>The circular also covers cantonal banks and includes requirements for the independence of Board of Director members (e.g., minimum number of independent members, and a definition of independence).</p> <p>No explicit guidance on state guarantees for cantonal banks is planned or likely to occur in the near future.</p>
Ensure that the likely consolidation among the private banks in response to U.S. tax pressures proceeds smoothly.	<p>Implemented</p> <p>In 2015, 7 banks and securities dealers ceased operations; 28 institutions are being assisted as they exit the market voluntarily. This trend mostly affected foreign and smaller wealth-management banks and was driven by general market pressures rather than U.S. tax issues. FINMA is systematically screening the bank population, has identified weak banks, and closely monitors each</p>

Recommendation	Implementation Status
	bank exiting the market. Typically, these exits proceed smoothly.
Issue guidance to auditors to ensure consistency of supervision and undertake more “deep dives” into particular areas of concern. Increase the intensity of on-site supervision, including of middle-sized and smaller banks.	<p>Implemented</p> <p>Revised FINMA Circular 2013/3 (in effect per January 1, 2019), on auditing, provides additional guidance to auditors in risk assessments, with a specific focus on banks of categories 1 and 2. FINMA has also developed several detailed “audit programs.” Since 2015, the Swiss Federal Audit Oversight Board is responsible for prudential auditors’ performance. External auditors’ documents are also subject to review by FINMA.</p> <p>FINMA’s direct on-site work has increased by about 44 percent during 2014-17. FINMA dedicates a significant share of its resources and ‘on-site reviews’ to the five largest banks and is in the process of requiring the external supervisory auditors to take a more risk-focused approach and to carry out ‘deep dive’ reviews rather than focusing primarily on annual supervisory audits. The ‘Team on Intensive Supervision,’ that targets onsite work for categories 4 and 5 banks, has also increased its activity.</p>
<i>Short to medium term</i>	
Increase FINMA’s resources so it can carry out its agenda for supervisory enhancement. The resource pool for highly qualified staff could be expanded.	<p>Partially Implemented</p> <p>FINMA resources have not increased. It considers the available resources are appropriate to fulfill its mandate. However, FINMA is improving the efficiency of its supervisory processes and reinvests freed up resources in new or increased supervisory activity in line with the authority’s risk-based supervisory approach. FINMA also plans to increase its overall resources due to the new tasks that are given to FINMA by financial market acts that were recently adopted, particularly on the supervision of external asset managers.</p>
<i>Medium term</i>	
Reach agreement with partner supervisors as to the resolution of the country’s global systemically important financial institutions.	<p>Partially Implemented</p> <p>FINMA has reached a consensus on the resolution strategy of its G-SIBs within both G-SIBs’ CMGs and has concluded cooperation agreements on crisis management of the Swiss G-SIBs with the other CMG members. However, FINMA has yet to establish the G-SIBs’ (group) resolution plans and remove several critical obstacles to resolvability.</p>
Make available the full range of best-practice resolution powers to handle any bank deemed systemic at the time.	<p>Implemented</p> <p>FINMA has a range of bank resolution powers, including liquidation, that are closely aligned with the FSB Key Attributes. The resolution regime applies to all banks</p>

Recommendation	Implementation Status
	<p>(systemic and non-systemic), the parent companies of a financial group or conglomerates, and group companies that carry out significant functions. The authorities have addressed key concerns raised by the 2014 FSAP, including now requiring that bail-in bonds be issued in Switzerland and governed by Swiss law. FINMA now also has explicit statutory powers to write down debt in resolution and to stay early termination rights. To further enhance the resolution regime, the FDF is preparing the public consultation in 2019 on revisions in the Banking Act.</p>
<p>Monitor closely the condition of the life insurance firms in advance of the prospective elimination of the palliative measures protecting the companies from the effects of low interest rates, and enhance public understanding of the Swiss Solvency Test.</p>	<p>Implemented</p> <p>While interest rates have remained low since the introduction of the temporary adjustments to the SST in 2013, this measure gave the insurance sector time to take necessary steps. FINMA decided to phase out the adjustments at end-2015. In addition, FINMA lowered the maximum allowable guaranteed interest rate for new Life business to practically 0 percent as of January 1, 2017.</p> <p>FINMA continues to monitor life insurers closely and shares information on SST-related topics with regulators and supervisors in other jurisdictions (e.g., EIOPA and BaFin). In addition, FINMA representatives regularly give presentations about the SST, both in Switzerland and abroad.</p>
<p>Prioritize regulatory reform of securities markets, to bring arrangements up to international standards. Enhance focus on conduct of business supervision of banks and securities dealers.</p>	<p>Partially Implemented</p> <p>The Federal Financial Services Act (FIDLEG/FinSA) will establish conduct of business rules for all market participants. The law aims to align relevant Swiss legislation with international standards and EU regulations. The act is planned to enter into force in 2020.</p> <p>The Federal Financial Market Infrastructure Act (FinfraG/FMIA) entered into force in January 2016 and aligns Swiss regulation of securities markets with international standards. Key changes include FMI regulation, pre- and post-trade transparency in derivatives trading, and market-conduct requirements.</p>
<p>Pursue legislation to improve policyholder protection, enhance brokers' supervision, and increase the level of public disclosure.</p>	<p>Implemented</p> <p>Since 2013, only marginal improvements were made—a revision of a draft revision of the Insurance Supervision Act is being publicly consulted during winter 2018/19, but the law will not enter into force before 2021 or 2022.</p>

Appendix II. FSAP Risk Assessment Matrix (RAM)

Risk	Overall Level of Concern	
	Relative Likelihood	Expected Impact if Materialized
<p>1. Tighter financial conditions and volatile trading business. Volatility rises, and term premia decompresses, triggering an abrupt tightening of financial conditions. This generates a generalized sell-off in stock markets, and the reemergence of sovereign stress in the Euro Area. Despite low policy rates, the sustained rise in risk premia leads to rising funding costs for banks and lending rates surge. Higher debt service stresses leveraged firms, stretched households, and vulnerable sovereigns, leading to higher default rates. Trading business suffers as volatile markets push clients to seek shelters in cash hurting transaction-driven capital market revenue and lowering performance fees.</p>	High	High
<p>2. Severe global recession and low net new money. A hard Brexit without a deal in place, a US trade war against Europe or China, concerns over public debt sustainability in Europe, or a credit cycle downturn in emerging markets undermine global medium-term growth. Switzerland economy is severely impacted as it remains exposed to global fragile economic conditions and the potential misallocation of investments in an ultra-low-yield environment. Financial stress from confidence shocks trigger a sharp fall in asset prices, followed by a pronounced credit crunch, triggering corporate and retail defaults. Swiss banks face additional risks, such as sudden inability to exchange currency, risk of capital controls and restrictions to capital transfers, political risk, or inability to enforce the right to sell collateral due to legal prescriptions, adding losses to Lombard loans. Net new money outflows surge hurting the wealth and asset management industry. and eroding fee and commission income.</p>	Medium	High
<p>3. Regional tensions and regulatory pressures. Unsatisfactory conclusion of ongoing discussions on the Swiss-EU framework agreement impacts Switzerland's externally-oriented economy eroding competitiveness and slipping Switzerland into recession. Marked changes in tax and regulatory requirements impact the wealth-management industry, putting pressure on Swiss banks' business models and feeding adverse feedback loops. Litigation reserves prove insufficient and operational risks inherent in private banking business models increases.</p>	Medium	High
<p>4. Large correction in real estate prices. A sharp reversal of historically high house prices in Switzerland poses material credit risks, due to domestic banks' high exposure to real estate markets. The correction in residential and Commercial Real Estate prices is concentrated in regions which have experienced more rapid price increases. Falls in asset prices widen LTV ratios, trigger margin calls, and increase borrowers' amortization schedules. Risks associated with affordability surges and default events spread to the nonbank financial industry exposed to real estate.</p>	Medium	High

Appendix III. Scenario Assumptions for Stress Test

Switzerland: Domestic Macroeconomic Scenario

The severity of the adverse scenario lies within the range of severities explored by the SNB in the adverse FSR scenarios. Despite accommodative monetary policy, sustained risk premia lead to stress in funding markets and basis risk.

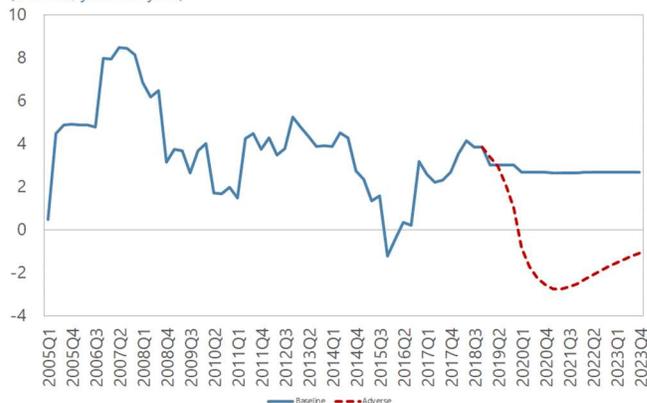
GDP Growth

(Percent, year-on-year)



Credit Growth

(Percent, year-on-year)



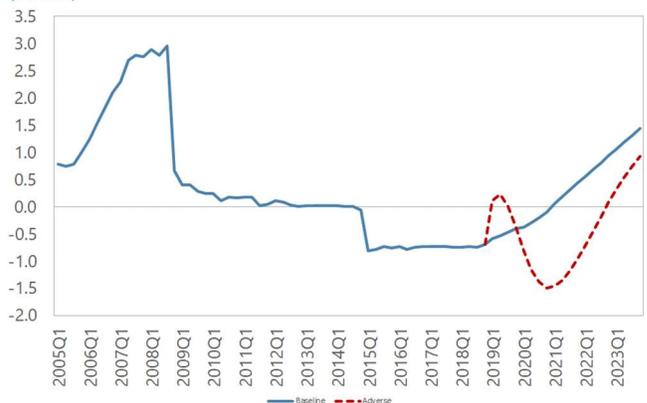
Real Estate Prices

(Percent, year-on-year)



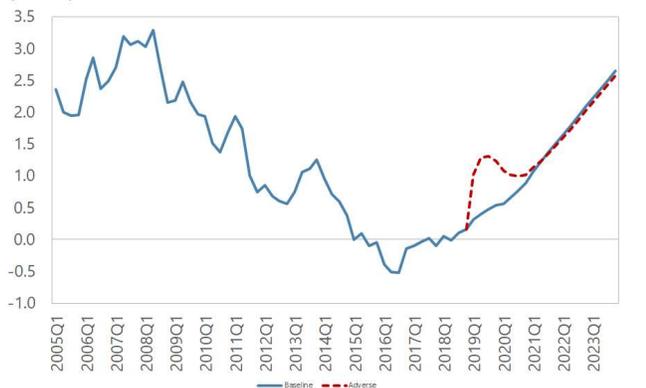
Libor

(Percent)



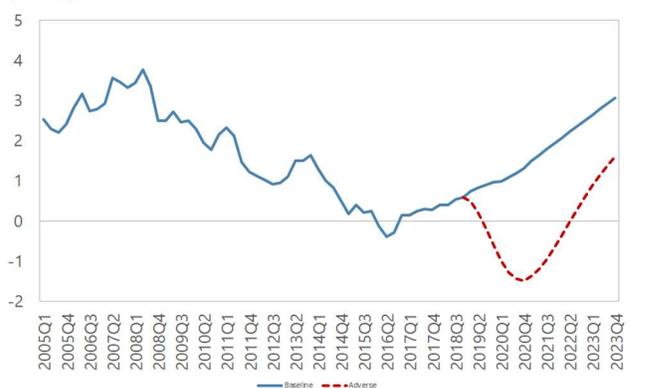
10-year Yield

(Percent)



10-year Swap Rate

(Percent)

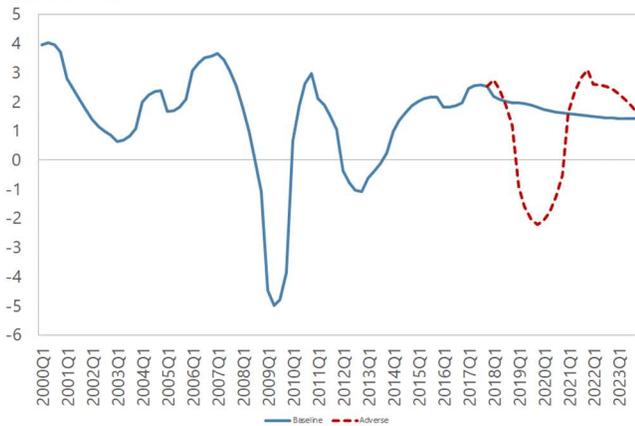


Source: IMF estimates.

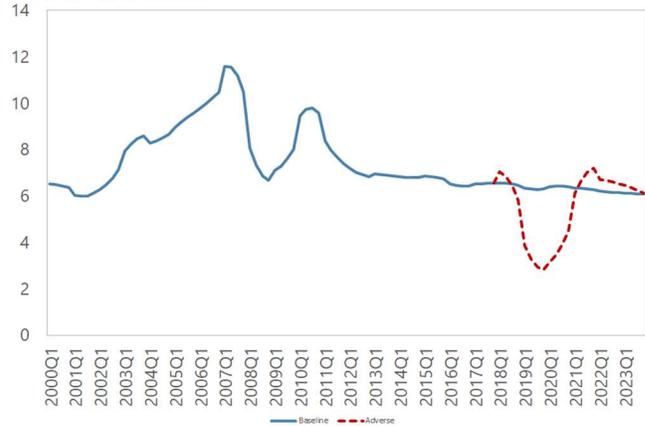
Switzerland: International Macroeconomic Scenario

Real GDP growth paths in material geographies for Swiss large internationally active banks. Output falls between 5.8 to 8.5 percent below baseline in other advanced economies by 2020, and by 4.8 to 5.8 percent in emerging economies.

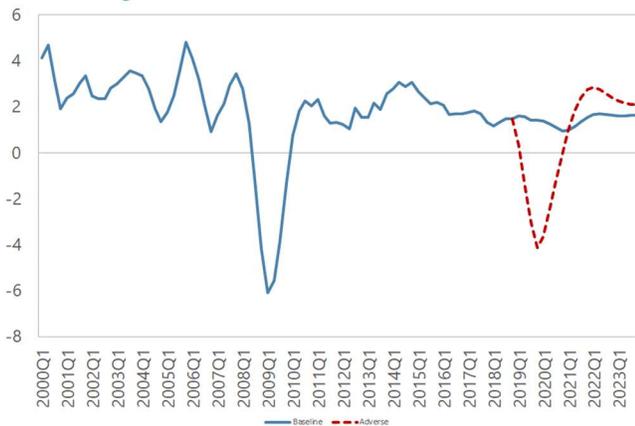
Euro Area



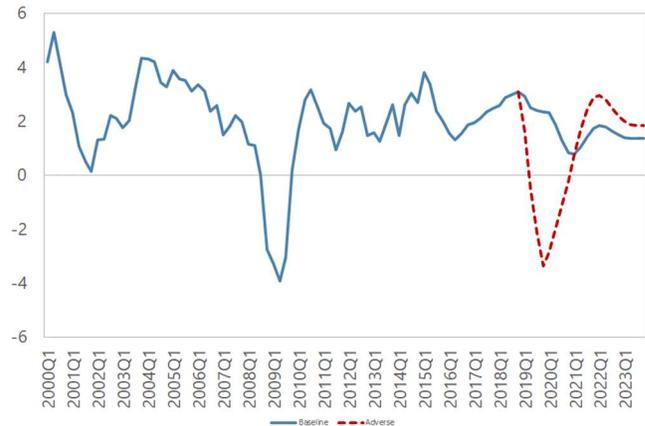
Emerging Markets



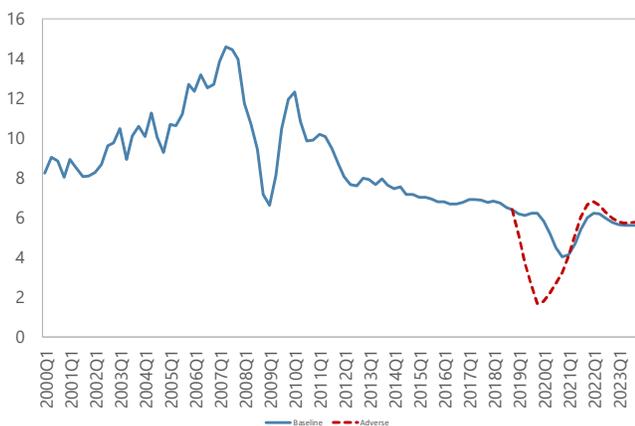
United Kingdom



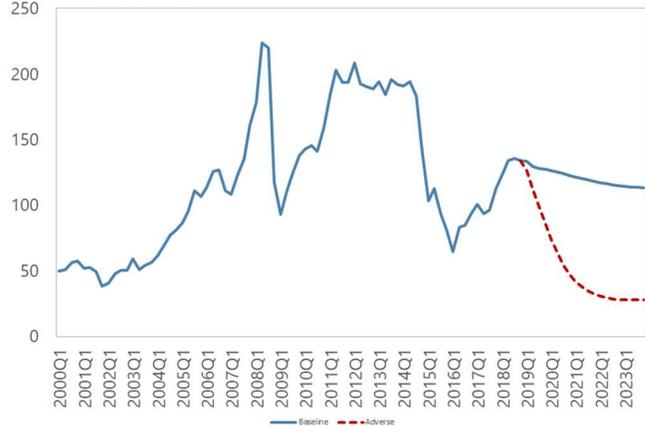
United States



China



Fuel Price Index



Source: IMF estimates.

Banking Sector: Solvency Test				
Domain		Framework		
		Top-Down by SNB	Top-Down by FSAP Team	Bottom-Up by Banks
1. Institutional perimeter	Institutions included	The two G-SIBs and all DFBs. DFBs include banks with domestic credit exposure amounting at a minimum 50 percent of their total balance sheet.	Twelve major banks, including the two G-SIBs, six DFBs, and four private banks	The two G-SIBs.
	Market share	About 90 percent of the domestic credit positions.	About 80 percent of banking system total assets.	Over 50 percent of banking system total assets.
	Data	Effective date: June 2018. Data: Supervisory data. Scope of consolidation: Consolidated group basis.	Effective date: June 2018. Data: Supervisory data, annual reports, Pillar 3 disclosures. Scope of consolidation: Consolidated group basis.	Effective date: June 2018. Data: Banks' managerial and proprietary data at the portfolio level. Consolidated group basis.
2. Channels of risk propagation	Methodology	All major risk categories, depending on the risk profile of the corresponding banking category, are covered, including credit risk, market risk, IRR, funding risk, F&C risk and operational risk, SNB structural model for mortgage lending risk. Hybrid approach for non-mortgage credit exposures combining structural and econometric modeling. Interest rate risk in the banking book (IRRBB) includes dynamic behavior of banks, clients, and depositors. Other pre-provision net revenue (PPNR) projections based on econometric modeling.	IMF structural model for mortgage lending risk by LTI/LTV risk bucket and vintage. Back-testing to historical 'crisis' and 'recovery' periods. Econometric approach for non-mortgage credit exposures by Basel IRB/STA portfolio (5 portfolios) broken down by geography (12 geographies). Merton-based approach for sovereign risk. IRRBB includes endogenous pass-through to lending rates, and solvency-funding cost interactions. Other pre-provision net revenue (PPNR) projections based on econometric modeling	Banks performed their bottom-up calculations based on the IMF scenarios. Results were benchmarked against top-down projections.
3. Tail shocks	Scenario analysis	The baseline scenario is based on the October WEO forecast. The adverse scenario is calibrated using the IMF's Global Macrofinancial Model satellite models for market risk factors. A global financial cycle downturn impacts Switzerland, triggering a slowdown in real GDP, financial market volatility, and a housing market correction. Global equity risk premium decompression reduces real equity prices by 40.0 percent in advanced. Output in Switzerland falls 7.7 percent below baseline over two years, reflecting a 8.7 percent fall in consumption and a 20.1 percent fall in investment, with consumption price inflation falling 2.5 percentage points below baseline by 2020, and the unemployment rate rising by 2 percentage points. This scenario constitutes a 3.3 standard deviation move in two-year cumulative real GDP growth rate by 2020, calculated over 1990–2018.		

Banking Sector: Solvency Test				
Domain		Framework		
		Top-Down by SNB	Top-Down by FSAP Team	Bottom-Up by Banks
4. Additional tests	Sensitivity analysis		Wider shocks to credit spreads. Credit rating downgrade on STA exposures. Shocks to the interest rate curves stressing risks associated with affordability in mortgages. Counterparty credit risk in derivative markets.	
5. Regulatory and market-based standards and parameters	Regulatory standards	Capital definition according to the phased-in Swiss implementation of Basel III. Non-material impact from transitional arrangements for capital components that are no longer eligible for additional Tier 1 and Tier 2 capital components. Under the TBTF regime, the going concern requirements consist of a basic requirement for the five D-SIBs as well as a progressive component depending on the degree of systemic importance according to their market share and asset size. The basic requirement for RWAs is 12.9 percent and 4.5 percent for the leverage ratio. In addition, the Swiss sectoral CCyB is set at 2 percent of risk-weighted positions secured by residential property situated in Switzerland.		
6. Reporting format for results	Output presentation	Evolution of CET1, Tier 1, CAR, and leverage ratio, for the aggregate banking system, and by type of bank. Contribution of key drivers to aggregate net profits and aggregate CET1 capital ratios. Number of banks and share of total assets below hurdle rates. Capital shortfall in terms of nominal GDP.		

Liquidity Stress Testing Matrix		
Domain		IMF designed stress test conducted jointly with SNB and FINMA
1. Institutional perimeter	Institutions	Twenty-one banks belonging to the twelve banking groups covered in the solvency test, at various levels of consolidation.
	Market share	About 80 percent of banking system total assets.
	Data and base date	Regulatory data based on Basel III standardized liquidity monitoring tools as of June 30, 2018.
2. Channels of risk propagation	Methodology	Shocks to inputs feeding into four-metrics included in the Basel III monitoring tools: <ul style="list-style-type: none"> • LCR in total currency (requirement), and in USD (monitoring metric) • Contractual maturity mismatch analysis (monitoring metric) • Available unencumbered assets (monitoring metric)
3. Risks and buffers	Risks	Funding risk, rollover risk, market liquidity risk, and liquidity risk related to margin requirements mainly related to the overall level of collateral posted for derivative positions.
	Buffers	HQLA securities assessed at market values net of haircut on a security-by-security basis.
4. Tail shocks	Size of the shock	<p><u>A range of adverse scenarios</u></p> <ul style="list-style-type: none"> • LCR Scenario under standard assumptions calibrated by BCBS. • An LCR “Switzerland retail stress” scenario. • An LCR “Switzerland wholesale stress” scenario. <p>Implied cash flow 5-day and 30-day tests using contractual maturity mismatch data over 14 time buckets. Assumptions include haircuts of up to 60 percent for securities and bank loans that can be mobilized in repos, no issuance of new unsecured funding and freeze of securitization markets, call-back rates of up to 100 percent, and cash outflows of up to 75 percent.</p>
5. Regulatory standards	Regulatory standards	Basel III full implementation for the LCR ratio for total currency and CHF at 100 percent. Counterbalancing capacity above net cash outflows under stress scenario.
6. Reporting format for results	Output presentation	Changes in average liquidity position and counterbalancing capacity for each scenario. Distribution of banks’ liquidity position for each scenario. Number of banks with counterbalancing capacity below net cash outflows. Banks’ post-shock net liquidity position. Liquidity shortfall in terms of banking system total liabilities.

Interconnectedness Matrix—Network Analysis		
Domain		TD by IMF
1. Institutional perimeter	Institutions	Twelve major banks, including the two G-SIBs, six DFBs, and four private banks
	Market share	About 80 percent of banking system total assets.
	Data and base date	Regulatory data based on large exposure template as of June 30, 2018.
2. Channels of risk propagation	Methodology	Network analysis using Furfine algorithm and Espinosa-Sole tool. Cascading effects from individual defaults through counterparty exposures. Liquidity shortages from individual defaults through concentration of funding.
3. Approach	Linkages with solvency and liquidity stress tests	<ul style="list-style-type: none"> The transmission of credit shocks will be linked to solvency stress test results to project capital depletion endogenously. The transmission of funding shocks will be linked to liquidity stress test results by allowing banks to draw down their liquid buffers to replace funding from defaulting funding counterparties.
	Buffers	Tier 1 capital. Counterbalancing capacity.
4. Tail shocks	Size of the shock	Individual bank defaults. Stressed capital position in line with solvency stress test results.
5. Sensitivity test	Factors	Performance of collateral (for secured exposures), loss given default (for unsecured exposures), substitutability of funding (for funding shock)
6. Reporting format for results	Output presentation	<ul style="list-style-type: none"> Failed capital in percent of total capital. Number of induced failures and contagion rounds. Absolute hazard rate. Vulnerability level to counterparty defaults.

Interconnectedness Matrix—CoVaR Analysis

Domain		TD by IMF
1. Institutional perimeter	Institutions	The financial sector included all listed Swiss banks.
	Market share	About 70 percent of Swiss banking system assets.
2. Data	Data type and base date	Assessment of contagion at weekly frequency over October 2005 through November 2018. <ul style="list-style-type: none"> • Bank-level data includes equity prices. • Swiss financial state variables include: VSMI, liquidity spread (difference between the 3m SNB repo rate and the 3m CHF benchmark curve), change in CHF 3m rate, change in the slope of the Swiss government yield curve, change in corporate credit spread of 10y Swiss BBA bond; change in Swiss equity market index; a global/European crisis dummy.
3. Channels of risk propagation	Methodology	CoVaR methodology based on Adrian and Brunnermeier (2016), and Valderrama et al (2012, 2015). <ul style="list-style-type: none"> • Characterization of co-dependence using a quantile approach. • Characterization of individual VaR dynamics using a GARCH (1,1) process on conditionally demeaned returns.
4. Tail shock	Size of the shock	5 percent quantile of the conditional loss distribution.
5. Robustness checks		Symmetric/asymmetric specification in the co-dependence structure of tail returns. CoVaR analysis applied to banks' equity returns and implied asset returns. Analysis of the 99th percentile of the loss distribution.
6. Reporting format for results	Output presentation	<ul style="list-style-type: none"> • Evolution of systemic risk in Switzerland • Determinants of tail banking system returns. • Individual contribution to systemic risk in the Swiss financial system; the European financial system; and the Global financial system.

INSURANCE SECTOR: SOLVENCY RISK			
Domain		Framework	
		BU by Insurance Undertakings	TD by IMF
1. Institutional perimeter	Institutions included	<ul style="list-style-type: none"> Six insurance groups 	
	Market share	<ul style="list-style-type: none"> Life: 56 percent of domestic premiums Non-life: 45 percent of domestic premiums 	
	Data	<ul style="list-style-type: none"> Companies' own data FINMA regulatory reporting 	<ul style="list-style-type: none"> Companies' own data from bottom-up stress test FINMA regulatory reporting
	Reference date	<ul style="list-style-type: none"> June 30, 2018 December 31, 2017 for natural catastrophe shocks 	<ul style="list-style-type: none"> June 30, 2018
2. Channels of risk propagation	Methodology	<ul style="list-style-type: none"> Investment assets: market value changes after price shocks, affecting the solvency position Sensitivity analysis: effect on available capital and solvency position. 	<ul style="list-style-type: none"> Investment assets: market value changes after price shocks, affecting the value of assets and liabilities Sensitivity analysis: effect on value of assets and liabilities.
	Time horizon	<ul style="list-style-type: none"> Instantaneous shock 3-year projections 	<ul style="list-style-type: none"> Instantaneous shock
3. Tail shocks	Scenario analysis	<ul style="list-style-type: none"> Macrofinancial scenario broadly in line with the banking sector stress test (see above) Adverse scenario: CHF policy rate declining by 133 bps, CHF sovereign yield curve steepening (+4 bps for 1y and +130 bps for 10y); sovereign spread shocks for other advanced economies between +92 bps and +184 bps (for high-yield EUR economies); stock prices -23.4 percent (Switzerland), -29.6 percent (for other advanced economies), private equity -15.0 percent, hedge funds -10.0 percent; domestic property prices between -18.5 percent (residential) and -22.2 percent (commercial), foreign property prices between -6.3 percent (residential) and -7.6 percent (commercial); corporate bond spreads of non-financials between +50 bps (AAA) and +350 bps (B and lower), and for financials between +70 bps (AAA) and +465 bps (B and lower); appreciation of CHF against major currencies. 	

INSURANCE SECTOR: SOLVENCY RISK

Domain		Framework	
		BU by Insurance Undertakings	TD by IMF
3. Tail shocks	Sensitivity analysis	<ul style="list-style-type: none"> • Default of largest banking counterparty • Natural catastrophes: U.S. earthquake, U.S. hurricane, Japan typhoon, Japan earthquake, Europe windstorm, Europe earthquake, Europe flood; each independently, model output calibrated at a 100-year return period 	<ul style="list-style-type: none"> • None
4. Risks and buffers	Risks/factors assessed	<ul style="list-style-type: none"> • Market risks: interest rates, share prices, property prices, credit spreads • Credit risks: default of largest financial counterparty • Underwriting risks: catastrophic events • Summation of risks, no diversification effects. 	<ul style="list-style-type: none"> • Market risks: interest rates, share prices, property prices, credit spreads • Summation of risks, no diversification effects.
	Buffers	<ul style="list-style-type: none"> • Product-specific 	<ul style="list-style-type: none"> • None
	Behavioral adjustments	<ul style="list-style-type: none"> • Management actions limited to non-discretionary rules in place at the reference date. 	<ul style="list-style-type: none"> • None
5. Regulatory standards and parameters	Regulatory/accounting standards	<ul style="list-style-type: none"> • Swiss Solvency Test • National GAAP, IFRS, US-GAAP 	
6. Reporting format for results	Output presentation	<ul style="list-style-type: none"> • Impact on solvency ratios • Impact on net income • Contribution of individual shocks • Dispersion measures of solvency ratios and net income. 	<ul style="list-style-type: none"> • Impact on assets over liabilities • Contribution of individual shocks • Dispersion measures of assets over liabilities