

Financial Stability Report 2016

SCHWEIZERISCHE NATIONALBANK
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Financial Stability Report 2016

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1

Overall assessment

MACROECONOMIC ENVIRONMENT

Economic and financial conditions for the Swiss banking sector have become more difficult over the last 12 months. At global level, growth has slowed and credit quality has weakened overall. Moreover, amid rising uncertainty about growth prospects, there have been instances of high volatility in stock, bond and foreign exchange markets. In Switzerland, subdued international demand and the strong franc have continued to weigh on economic growth. In this environment, banks' credit risk premia have widened globally and their stock prices have fallen. In addition, long-term interest rates have declined further from already exceptionally low levels. The prolonged period of low interest rates carries risks for global financial stability. Imbalances on real estate markets are apparent in several countries and banks' profitability is under pressure.

The SNB's baseline scenario assumes that economic conditions for the Swiss banking sector improve. Economic growth picks up moderately in the euro area, but unemployment remains high in many member states. In the US, growth remains robust. Growth in China slows further and some major emerging markets remain in recession. In Switzerland, the recovery continues and unemployment begins to decline slowly after peaking in the second half of 2016.

In addition to the baseline scenario, the SNB uses four adverse scenarios to assess banking sector resilience against unlikely, highly unfavourable but possible developments in economic and financial conditions. Under the first adverse scenario, the euro area debt crisis re-escalates, resulting in widespread financial and banking stress, a recession, and a further postponement of the normalisation of monetary conditions. The second scenario assumes a major crisis in emerging markets, comparable to the crises in the second half of the 1990s. Under the third scenario, the US enters a deep recession, which is transmitted to the rest of the world. The fourth scenario analyses the impact of a rapid normalisation of global monetary policy.

BIG BANKS

Over the past year, the Swiss big banks improved their capital situation further, as regards both risk-weighted capital ratios and leverage ratios. Both big banks are almost fully compliant with the look-through requirements – i.e. the requirements applicable from the beginning of 2019 – of the current Swiss 'too big to fail' regulations

(TBTF1)¹ and the international Basel III capital framework.

At both national and international level, regulatory reforms either have been passed or are underway to further improve bank resilience and resolvability. At national level, as part of the revision of the 'too big to fail' regulations, the Federal Council approved measures to significantly increase requirements on loss-absorbing capacity – in particular leverage ratio requirements – in addition to measures on resolvability (TBTF2). This increase comprises both the requirements for going-concern capital, which is loss-bearing under regular operating conditions, and the requirements for gone-concern instruments, which are used to recapitalise a bank in the event of imminent insolvency without recourse to government support. These new going-concern and gone-concern requirements will put Switzerland back among the international leaders as regards regulatory loss-absorbing capacity. Given that, in an international comparison, the two Swiss big banks are particularly large relative to the economy, such an increase is essential. TBTF2 will apply from 1 July 2016, with a phase-in period until end-2019.

At international level, the Financial Stability Board (FSB) finalised the minimum requirements for total loss-absorbing capacity (TLAC) for global systemically important banks (G-SIBs) at end-2015. In addition, the Basel Committee on Banking Supervision is working on reforms to risk-weighted capital requirements. These include, in particular, a fundamental review of the standardised approach and the introduction of floors for model-based risk-weighted assets (RWA). The reforms are aimed at reducing the excessive variability in – and thereby restoring the credibility of – RWA. Moreover, the Basel Committee has confirmed the 3% minimum requirement for the Basel III leverage ratio and is considering the introduction of a higher leverage ratio requirement for G-SIBs. The reforms are due to be completed and published by end-2016.

At the end of the first quarter of 2016, both big banks were fully compliant with the initial TBTF2 phase-in requirements, which come into effect on 1 July 2016. To meet the corresponding look-through requirements by the beginning of 2020, however, the big banks need to take action – particularly in meeting the leverage ratio requirements and the gone-concern requirements. As regards risk-weighted going-concern requirements, by contrast, both big banks are already almost fully compliant. However, it is likely that RWA will increase in light of the measures drawn up by the Basel Committee. This expected RWA increase has, as far as possible, been factored into the calibration of the TBTF2 requirements.

¹ TBTF1 denotes the 'too big to fail' regulations originally passed in 2012 with a phase-in period until end-2018. TBTF1 will remain in force until end-June 2016.

These reforms – especially the higher leverage ratio requirements – will result in a further strengthening of the big banks’ resilience. In view of their systemic importance, this strengthening is necessary for two reasons. First, the big banks’ loss potential relative to their capitalisation continues to be substantial, both when measured on the basis of the losses experienced in the last financial crisis and according to the adverse scenarios applied by the SNB. The highest loss potential results from the US recession scenario, followed by the euro area debt crisis scenario and the emerging market crisis scenario. Second, while leverage ratios at both Swiss big banks have improved by international standards, their Basel III Tier 1 leverage ratios are currently still below the average for large globally active banks.

The SNB therefore welcomes and supports the regulatory reforms, and will continue to be actively involved in their finalisation. The combined package of national and international reforms represents a decisive step in the overall process to resolve the ‘too big to fail’ issue in Switzerland.

DOMESTICALLY FOCUSED COMMERCIAL BANKS **Adequate resilience, despite substantial increase in mortgage exposure**

In 2015, lending volumes on the Swiss mortgage market recorded weaker growth than in the previous year. This slowdown can essentially be attributed to the two big banks. Real estate prices also increased at a slower pace. Yet the imbalances on these markets have increased slightly, due to comparatively weaker developments in fundamentals such as GDP, population growth and rents. Against this background, the exposure of domestically focused banks to the Swiss mortgage and residential real estate markets increased substantially. Mortgage lending growth at domestically focused banks remained strong. Moreover, the share of new loans with high loan-to-income (LTI) ratios, as well as these banks’ interest rate risk exposure from maturity transformation, increased further.

Remarkably, domestically focused banks’ average interest rate margins on outstanding claims stabilised at a low level in 2015, after a seven-year downward trend. This occurred despite liability margins² slipping further into negative territory following the SNB’s decision in early 2015 to reduce the interest rate on sight deposits at the central bank to –0.75%. Domestically focused banks reacted to the pressure on the interest rate margin by increasing their asset margins³ on newly extended mortgages and by expanding maturity transformation.

The stabilisation of interest rate margins and profit retention has helped to ensure that – despite the increase in exposure – domestically focused banks’ resilience has not deteriorated compared to last year and remains adequate. First, the regulatory capitalisation of these banks improved again in 2015. Domestically focused banks’ available capital increased significantly faster than their RWA and by slightly more than the size of their balance sheets. Hence, their risk-weighted capital ratios have increased and are significantly above regulatory minimum requirements overall. Moreover, their leverage ratios have increased slightly compared to 2014, and remain high by historical standards.

Second, stress test results suggest that most banks’ capital surpluses, relative to the regulatory minimum requirements, are large enough to absorb the losses related to relevant adverse scenarios. The focus here is on two scenarios that are particularly relevant for these banks in view of their risk exposures: the euro area debt crisis scenario and the interest rate shock scenario. The euro area debt crisis scenario impacts banks mainly through its effects on the Swiss economy and hence on banks’ credit risk. The interest rate shock scenario tests banks’ risk absorption capacity in light of a potential build-up of interest rate risk in their balance sheets. According to SNB estimates, the euro area debt crisis scenario would result in a marked decline in domestically focused banks’ aggregate earnings and in substantial losses at many of these banks. By contrast, the interest rate shock scenario should not lead to a reduction in aggregate earnings compared to the baseline scenario. However, about half of the banks would suffer a decline in net interest income, some of them to a significant extent. Under both scenarios, almost all domestically focused banks should be able to absorb these losses without seeing their capitalisation fall below the regulatory minimum.

While these results suggest that, overall, the impact of the interest rate shock scenario on the banking system would be mild, they have to be put into perspective as the impact of shocks is highly non-linear. This holds particularly for interest rate shocks in the current environment of low or negative interest rates. The mild impact on aggregate earnings under the interest rate shock scenario reflects the fact that the reduction of the margin from maturity transformation⁴ would be more than offset by the positive impact of the restoration of the liability margin. For larger interest rate shocks, however, the reduction of the margin from maturity transformation would outweigh the positive impact of the restored liability margin for a higher proportion of banks.

² The liability margin is the difference between alternative funding costs for the same maturity on the capital market and the interest paid on the liability.

³ The asset margin is the difference between the interest on the asset and on the alternative asset with the same maturity on the capital market. For new mortgages, the asset margin is approximated as the difference between the mortgage rate and the swap rate for the same maturity.

⁴ The margin from maturity transformation is the difference between the interest rate on an alternative investment on the capital market with the same maturity as the asset and alternative funding costs on the capital market for the same maturity as the liability.

The stress test results and the existence of non-linearities in the impact of shocks highlight the importance of significant capital surpluses in the current situation, which is characterised by mortgage and real estate market imbalances and exceptionally low interest rates. These surpluses should be preserved going forward. Hence, banks should ensure that they are able to absorb the potential losses associated with significant adverse shocks when defining their capital plans and their lending or interest rate risk policy.

Banks' lending and interest rate risk policies warrant special attention

Financial stability risks emanating from the Swiss mortgage and residential real estate markets and the low interest rate environment could increase further.

First, with subdued growth in fundamentals, even low momentum on the Swiss mortgage and residential real estate markets could lead to a further increase in imbalances on these markets. Second, absent a normalisation of interest rates, upward pressure on prices will remain strong on the residential real estate market in the near term, particularly for investment property. A further rise in prices would increase the risk of a substantial correction on the real estate market in the event of an interest rate increase at a later stage. Finally, downward pressure on these banks' interest rate margins remains high. Banks might respond to this pressure by taking on more risks in mortgage lending. This would further increase their exposure to large interest rate shocks and to a correction on the mortgage and real estate markets in the medium term.

The SNB will continue to monitor developments on the mortgage and real estate markets closely, paying particular attention to developments in the residential investment property segment as well as to banks' risk-taking in mortgage lending. In parallel, the SNB will continue to reassess the need for an adjustment of the countercyclical capital buffer (CCyB) on a regular basis.

2 Macroeconomic environment

2.1 KEY DEVELOPMENTS

Economic and financial conditions for the Swiss banking sector have become more difficult over the last 12 months. Against the backdrop of slowing global economic growth, credit quality has weakened overall. Moreover, amid rising uncertainty about global growth prospects, there have been instances of high volatility in stock, bond and foreign exchange markets. In this environment, banks' credit risk premia have widened globally and their stock prices have fallen. In addition, long-term interest rates have declined further from already exceptionally low levels. The prolonged period of low interest rates carries risks for global financial stability. Imbalances on real estate markets are apparent in several countries and banks' profitability is under pressure.

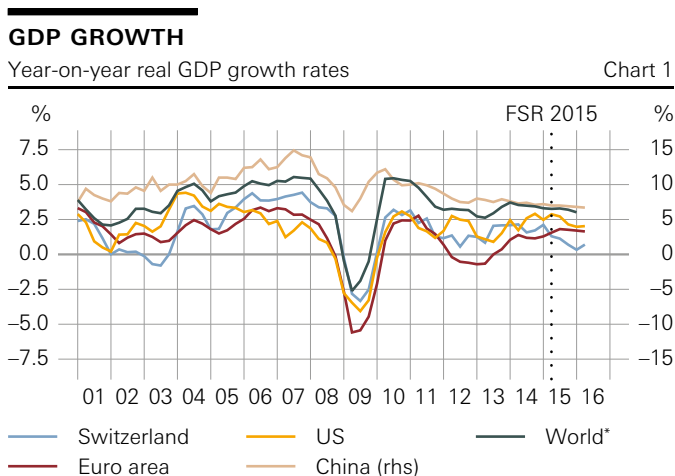
Slowing economic growth: Economic growth has slowed over the last 12 months, in both advanced and emerging economies. Among the major economies, the US, the UK and China were affected (cf. chart 1). In the euro area, conversely, growth has accelerated slightly. In Switzerland, subdued international demand and the strong franc have continued to weigh on economic growth.

Deterioration of credit quality: Credit quality has deteriorated overall. While improving marginally in the household segment, it has decreased moderately in the sovereign segment and considerably in the corporate

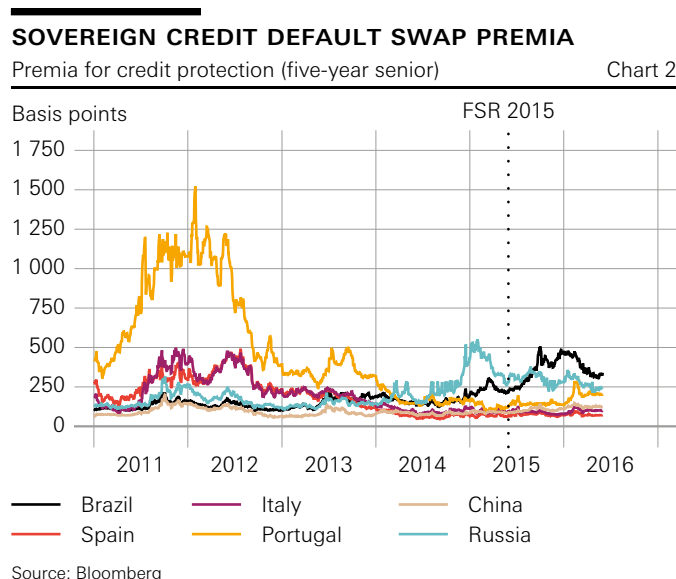
segment. In the sovereign segment, risk premia in large emerging markets such as Brazil have further increased and are at historically high levels (cf. chart 2). The main drivers behind these increases were deteriorating growth prospects, falling commodity prices and rising political uncertainty. In the euro area, sovereign risk premia of the large southern member states have been stable, but have increased in Portugal, reflecting political uncertainties and vulnerabilities in the banking sector. In the corporate segment, bond spreads have widened globally (cf. chart 3) and the ratio of credit rating downgrades to total rating changes has increased in both Europe and the US (cf. chart 4), indicating deteriorating credit quality. The energy sector was particularly affected. Furthermore, ratios of non-performing loans to total loans in large southern member states of the euro area remain historically high, despite some recent improvements in Spain and signs of stabilisation in Italy. In line with the global developments described above, corporate credit quality has also weakened in Switzerland, as indicated for instance by widening corporate bond spreads and a rise in the number of corporate defaults.

Volatile stock markets: In light of rising uncertainty about global growth prospects, stock prices declined significantly in all major markets between August 2015 and February 2016 (cf. chart 5). As investors were particularly concerned about growth in China, prices on Asian stock markets fell especially strongly. There have been instances of high stock market volatility, with peaks being reached that were last observed in 2011. From mid-February 2016 onwards, however, stock markets have offset some of their losses; and in the case of the US, even most of the losses. The cyclically adjusted price/earnings ratio (a frequently used stock valuation measure) is currently near or below its long-term average for all major markets.¹

¹ Based on a 40-year average of the ratio. For the US, long-term data covering more than 100 years indicate that the price/earnings ratio is substantially above its historical average.



* United States, euro area, United Kingdom, Japan, China, South Korea, India, Brazil and Russia.
Sources: State Secretariat for Economic Affairs (SECO), Thomson Reuters Datastream, SNB calculations



Turbulence in the global banking sector: Banks were particularly affected by the overall deterioration of credit quality and volatile financial markets. In early 2016, banks' stock prices declined sharply and by substantially more than the market as a whole (cf. chart 6). Furthermore, banks' credit risk premia have increased globally, pointing to renewed concerns by market participants about the resilience of banks (cf. chart 7). The increase was particularly pronounced for banks in southern euro area member states, indicating that banks in these countries are still perceived as relatively more vulnerable to a deterioration in the economic and financial environment.

Further decline in interest rates: Interest rates have generally declined further from historically low levels over the last 12 months. A notable exception are US short-term rates, which have risen. Long-term interest rates now lie close to or below zero in a number of European countries and Japan (cf. chart 8). The prolonged period of very low interest rates might lead investors to

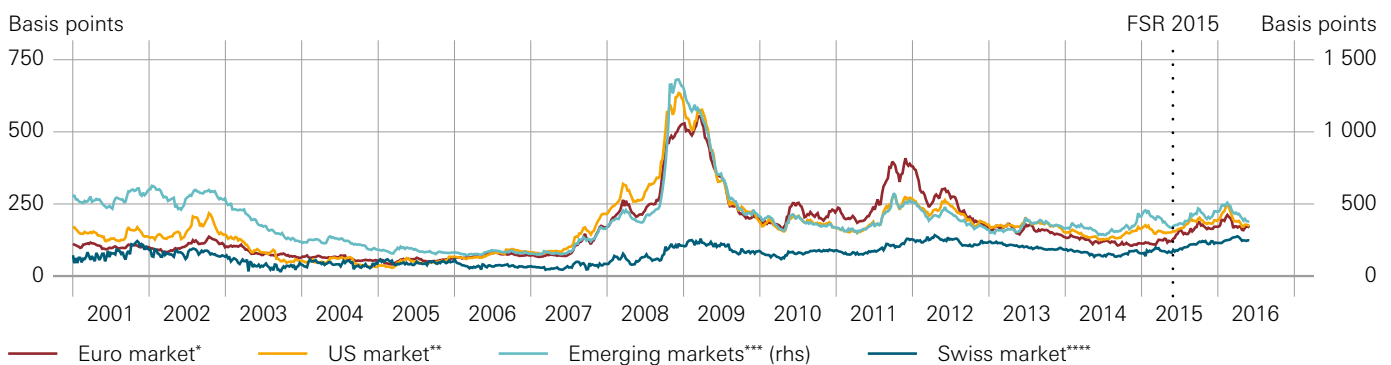
underestimate the possibility of interest rates reverting to higher levels in the medium term. Historical experience shows that interest rates can normalise rapidly and unexpectedly. Moreover, interest rates may significantly overshoot long-term averages during the normalisation process.

Upward tendency for real estate markets: In an environment of very low interest rates, real estate markets have mostly edged upwards over the last 12 months and there are signs of imbalances in a number of European countries. European real estate markets have generally gained momentum, with slower dynamics reported in the southern euro area member states. The price-to-rent ratio still points to imbalances for several European countries, notably the UK and France (cf. chart 9). Meanwhile, in the US, real estate prices have risen moderately and somewhat faster than rents. In Switzerland, imbalances on the mortgage and real estate markets have increased slightly (cf. chapter 3).

BOND SPREADS

Yield spread between corporate and government bonds

Chart 3

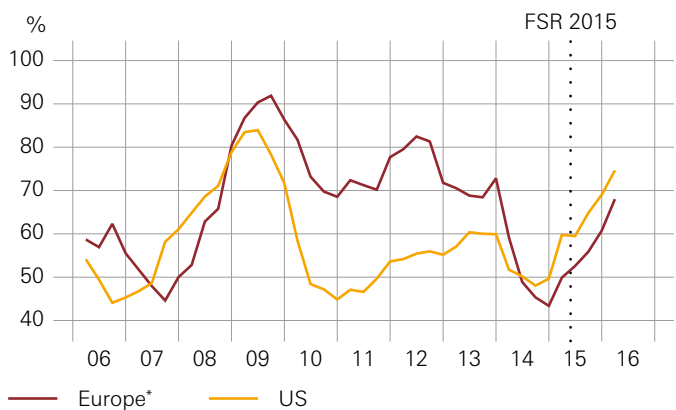


* Euro-Aggregate Corporate (investment grade, 7–10 year maturity, EUR-denominated) and German Government (7–10 year maturity), Bank of America Merrill Lynch.
 ** US Corporate (investment grade, 7–10 year maturity, USD-denominated) and US Treasury (7–10 year maturity), Bank of America Merrill Lynch.
 *** Emerging Market Corporate (USD and EUR-denominated), option-adjusted spread, Bank of America Merrill Lynch.
 **** Yields for Swiss investment grade corporate bonds and for Swiss Confederation bonds (10-year maturity), calculated by the SNB.
 Sources: SNB, Thomson Reuters Datastream

RATING DOWNGRADES RATIO

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

Chart 4

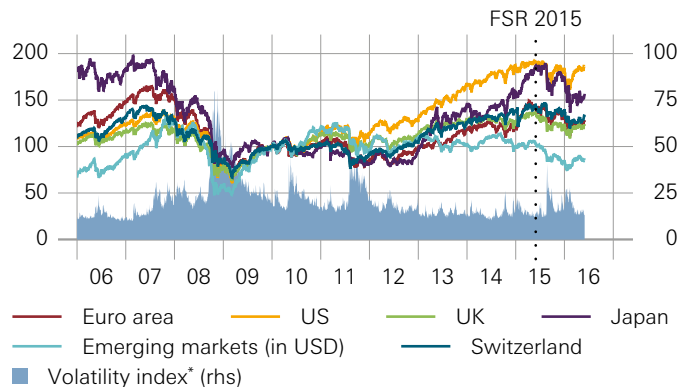


* EU-17 countries plus Switzerland, Norway and Iceland.
 Sources: Bloomberg, Moody's

STOCK MARKET INDICES

Datastream global indices (indexed to 1 Jan 2010 = 100) and volatility

Chart 5



* The index used is the Chicago Board Options Exchange Market Volatility Index (VIX), which measures the implied volatility of index options on the S&P 500.
 Source: Thomson Reuters Datastream

2.2 SCENARIOS

To capture the different sources of risk to the Swiss banking sector, the SNB considers a baseline scenario and four adverse scenarios for developments in the economic environment and in financial market conditions. The baseline scenario describes the most likely outcome given currently available information. By contrast, the adverse scenarios are designed to assess the resilience of the Swiss banking sector against unlikely, highly unfavourable but possible developments in economic and financial conditions. All four adverse scenarios concentrate on macroeconomic and financial risks, but exclude operational and legal risks for banks. This is because the materialisation of operational and legal risks is largely independent of the underlying economic scenario. The impact of the different scenarios on the Swiss banking sector as regards banks' loss potential and resilience is examined in chapter 3.

Baseline scenario

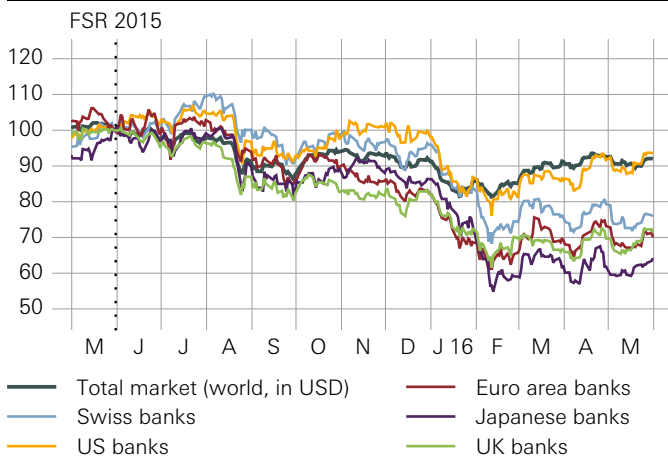
Under the baseline scenario, economic conditions for the Swiss banking sector improve. Economic growth picks up moderately in the euro area, but unemployment stays high in many member states. In the US, growth continues to be robust. Growth in China slows further and some major emerging markets remain in recession. In Switzerland, the recovery continues and unemployment begins to decline slowly after peaking in the second half of 2016.

Adverse scenarios

Euro area debt crisis: The debt crisis in the euro area re-escalates. Sovereign risk premia for southern euro area member states rise abruptly, resulting in widespread financial and banking stress. Confidence declines and a deep recession spreads across Europe, originating from the southern member states. Stress in the euro area banking sector and financial markets also spills over to the US and Switzerland, triggering a fall in share prices and a widening of corporate spreads. Against this backdrop,

STOCK MARKET INDICES: TOTAL AND BANKS

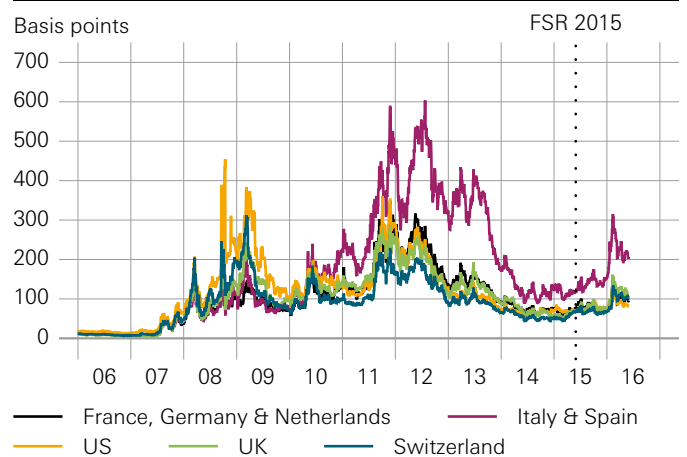
Datastream global indices, indexed to 29 May 2015 = 100 Chart 6



Source: Thomson Reuters Datastream

CREDIT DEFAULT SWAP AVERAGES

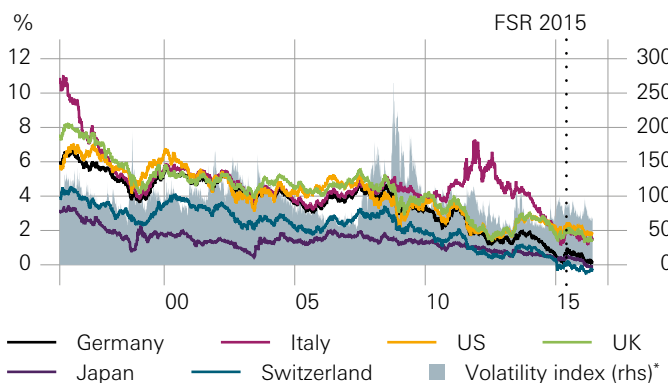
Average of biggest banks (five-year senior) Chart 7



Sources: Bloomberg, SNB calculations

LONG-TERM INTEREST RATES: TEN-YEAR GOVERNMENT BONDS

Chart 8

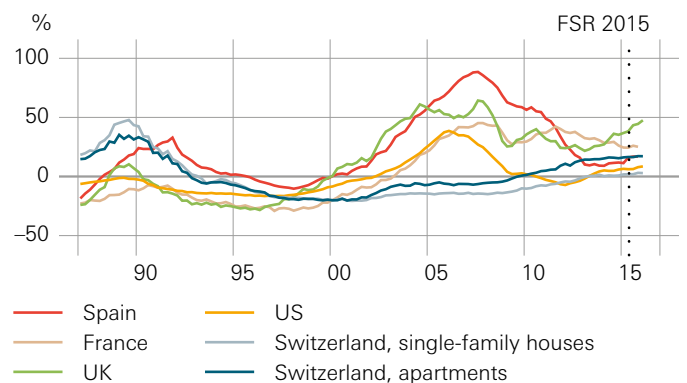


* The index used is the MOVE Index, which measures the implied volatility of US Treasury options.

Sources: Bloomberg, Thomson Reuters Datastream

PRICE-TO-RENT RATIO: DEVIATION FROM LONG-TERM AVERAGE*

Chart 9



* The average is calculated over the period from 1970 to 2015, or over the period for which data are available. For Switzerland, asking prices are used.

Sources: BIS, OECD, SFSO, Thomson Reuters Datastream, Wüest & Partner

the normalisation of monetary conditions is postponed further. The severity of the scenario is guided by the global financial crisis in 2008/2009, but is centred on acute banking stress in the euro area. The recession in Switzerland is deeper than in 2009 and leads to a sharp drop in Swiss real estate prices, in both the residential and commercial sector. The scenario is similar to the euro area debt crisis scenario in last year's *Financial Stability Report*.

Emerging market crisis: A major crisis erupts in emerging markets, comparable to the crises during the second half of the 1990s. Emerging market bond spreads rise abruptly and stock markets fall sharply. The severe deterioration in financial conditions causes economic growth in these countries to decline sharply, and default rates on corporate and household debt increase substantially, leading to a pullback in bank credit. Financial stress is transmitted to advanced economies, including Switzerland, and their stock markets fall sharply. Short-term financing conditions for banks are impaired. Advanced economies experience a mild recession. The scenario is similar to the emerging market crisis scenario in last year's *Financial Stability Report*.

US recession: There is a severe recession in the US, which spreads to the rest of the world. US unemployment rises to historically high levels. Short-term rates in the US turn negative. There is a significant increase in financial stress, and US real estate and share prices drop sharply. There are also major consequences for the rest of the world. Switzerland, Europe and Japan fall into recession, and there is a marked slowdown in emerging markets. The scenario specification is similar to the 'severely adverse scenario' of the US Federal Reserve's 2016 stress test.²

Interest rate shock: Policymakers overestimate global potential output. With monetary policy overly expansionary, inflationary pressures build up. Central banks raise interest rates rapidly and substantially in order to bring inflation back to target. Economic growth subsequently slows significantly, and stock and real estate prices decline.

² For a description of the Federal Reserve scenario, cf. www.federalreserve.gov/newsevents/press/bcreg/20160128a.htm.

3

Exposures and resilience

The activities of banks as intermediaries involve risks. These risks can materialise in particular when the economic environment and financial market conditions deteriorate. The ensuing loss potential depends on the scenario assumed and on banks' exposures. From a financial stability perspective, it is essential that banks hold sufficient capital to absorb potential losses resulting from their activities, even under a very adverse scenario.

The SNB analyses the resilience of the Swiss banking sector by estimating the loss potential under the scenarios described in chapter 2.2 and then comparing this loss potential to banks' capital. The analysis is performed separately for big banks and domestically focused commercial banks.

3.1. BIG BANKS

Over the past year, the Swiss big banks improved their capital situation further. At the end of the first quarter of 2016, the two banks were almost fully compliant with the look-through requirements – i.e. the requirements applicable from the beginning of 2019 – of the current Swiss 'too big to fail' regulations (TBTF1) and the international Basel III capital framework. However, the revised Swiss 'too big to fail' regulations (TBTF2) will require that the big banks take action with regard to meeting the look-through requirements which will apply from the beginning of 2020. TBTF2 will apply from 1 July 2016, with a phase-in period until end-2019. These revised regulations and the current international reforms will further strengthen the big banks' resilience. Given their systemic importance, such a strengthening is essential.

The next section outlines the exposures and loss potential of the Swiss big banks. This is followed by a description of the regulatory capital figures, as well as the market's assessment and an appraisal of the big banks' resilience.

3.1.1 EXPOSURES AND IMPACT OF SCENARIOS

The assessment of loss potential is based on the big banks' risk exposures and on the analysis of these exposures' sensitivity to a combination of shocks assumed in each scenario. The results are described in qualitative terms and illustrated with publicly available exposure and balance sheet data. This takes into account, in particular, the fact that risk exposures and sensitivities can be measured in a number of different ways. The risk exposures and sensitivities used to calculate the loss potential cannot be disclosed, as they are based on confidential bank-internal data.

Both big banks publish their own risk assessments, which cannot, however, be directly compared with the SNB's loss potential estimates, for two reasons. Either they provide statistical measures that are not based on scenarios, or the big banks do not publish information on the severity of the stress scenario applied.

As regards statistical measures of loss potential, Credit Suisse reported a position risk of CHF 21 billion,¹ or CHF 35 billion if operational and other risks are included, and UBS reported risk-based capital of CHF 31 billion, including operational risks.² Owing to different methodologies, these two statistical measures are not directly comparable.

Substantial loss potential

According to SNB stress tests, the big banks' loss potential under the adverse scenarios is still substantial. The highest loss potential results from the US recession scenario, followed by the euro area debt crisis scenario and the emerging market crisis scenario. In general, the loss potential stems primarily from loans in the US and Switzerland, counterparty exposure from derivatives and securities financing transactions, and equity and bond positions. Irrespective of the scenarios considered, losses can also result from operational and legal risks.

Loans in the United States: A deterioration of credit quality in the US, as described in the US recession scenario, would lead to substantial losses for the big banks in connection with corporate loans. At end-2015, the big banks together had unsecured claims outstanding against the private sector in the US (excluding banks) totalling around CHF 70 billion.³ Since the last *Financial Stability Report*, exposure to energy companies has attracted increased attention. The big banks' net exposure resulting from loans to oil and gas companies in North America totalled CHF 12 billion at the end of the first quarter 2016.⁴

Loans in Switzerland: A deterioration of credit quality in Switzerland, as described in the US recession and euro area debt crisis scenarios, could lead to substantial losses at Switzerland's two big banks, owing to write-downs and credit defaults. At end-2015, they had loans outstanding against domestic clients totalling CHF 309 billion, of which CHF 261 billion were in the form of mortgage loans.⁵

1 Source: Quarterly report for Q1 2016. Credit Suisse bases its calculation of position risk on its Economic Capital Model. The position risk figures used here correspond to the statistical loss potential over a one-year horizon. The probability that this level of losses will not be exceeded is 99.97%.

2 Source: Quarterly report for Q1 2016. UBS bases its calculation of risk-based capital on its statistical risk framework. The risk-based capital figures correspond to the statistical loss potential over a one-year horizon. The probability that this level of losses will not be exceeded is 99.90%.

3 Source: SNB. Alongside claims against companies, this also includes claims against private households. Unsecured claims may include trading and other liquid assets with comparatively low risk.

4 Source: Big banks' presentations of results for Q1 2016.

5 Source: SNB.

Counterparties: The euro area debt crisis and US recession scenarios could lead to substantial losses from counterparty exposures. These exposures would result from derivatives and securities financing transactions. At end-2015, regulatory gross counterparty credit risk exposures amounted to CHF 258 billion, excluding hedges and collateral.⁶

Equities and bonds: A sharp decrease in share prices around the world and a sharp increase in corporate bond spreads could lead to substantial losses, depending on the effectiveness of hedging. At end-2015, the big banks' gross trading portfolios in equities and corporate bonds totalled CHF 172 billion.⁷ These holdings are partly hedged with derivatives positions. As an indication of loss potential, Credit Suisse reports a position risk for equities and bonds of around 22% of its total position risk.⁸

3.1.2 RESILIENCE

The analysis of resilience focuses on going-concern loss-absorbing capital and on gone-concern instruments as defined in the Swiss 'too big to fail' regulations. Going-concern loss-absorbing capital is capital that is loss-bearing under regular operating conditions, whereas gone-concern loss-absorbing instruments serve to recapitalise a bank in the event of imminent insolvency without recourse to government support. This is achieved by writing off designated debt instruments or converting them into equity.

At both national and international level, regulatory reforms either have been passed or are underway to further improve bank resilience and resolvability. In May 2016, the Federal Council adopted the revisions to the 'too big to fail' regulations originally passed in 2012 (TBTF1). In addition to resolvability measures, these amendments (TBTF2) define higher requirements on loss-absorbing capacity in particular, as well as adjustments to the quality requirements for eligible instruments.

At international level, the FSB finalised the minimum TLAC requirements for G-SIBs at end-2015. The Basel Committee, in addition to refining standards for the leverage ratio, is currently pressing ahead with efforts to reform risk-weighted capital requirements. Both national and international reforms are explained in more detail under 'National and international regulatory developments on loss absorbency' (pp. 17–18).

Capital situation further improved

Over the past year, the Swiss big banks have further improved their capital situation (cf. table 1), with respect to both risk-weighted capital ratios and leverage ratios.

6 Sources: UBS, *Annual Report, 2015*; Credit Suisse, *Basel III – Pillar 3 – disclosures*, December 2015.

7 Sources: Annual reports for 2015.

8 Source: Quarterly report for Q1 2016. Since Credit Suisse does not disclose any breakdown of the total position risk based on a confidence level of 99.97%, the breakdown of position risk published by Credit Suisse – which is based on a confidence level of 99% – is used here.

Between the first quarter of 2015 and the first quarter of 2016, the risk-weighted capital ratios of Credit Suisse and UBS – as measured by going-concern loss-absorbing capital according to TBTF1⁹ – increased by almost 10% to 14.2% and by 13% to 16.8% respectively. Their Basel III Tier 1 leverage ratios increased by more than 20% to 4.4% and 4.1% respectively during the same period.

At both banks, the improvement in the *risk-weighted capital ratios* is primarily due to capital build-up, resulting from a capital increase (Credit Suisse) or the issuance of high-trigger contingent capital instruments (UBS). The increases in the *leverage ratios* are due to both capital build-up and significant reductions of around 10% in their total exposures.

At the end of the first quarter of 2016, both big banks were fully compliant with the TBTF1 phase-in requirements and were also fully compliant with the TBTF2 phase-in requirements coming into effect in July 2016. TBTF2 is to be phased in by end-2019. During the phase-in period, banks are allowed to 'grandfather' existing contingent capital instruments (CoCos), i.e. all outstanding CoCos are recognised as going-concern capital. Including grandfathered CoCos, the going-concern leverage ratios amount to 5.1% for Credit Suisse and 5.4% for UBS. Similarly, the going-concern risk-weighted ratios amount to 17.5% and 22.7% respectively (cf. table 1).¹⁰

With one exception, both big banks were also compliant with the TBTF1 look-through requirements and the international Basel III capital regulations.¹¹ TBTF2, which is to be phased in by end-2019, however, will require that the big banks take action – particularly in meeting the leverage ratio requirements and the gone-concern requirements (cf. table 1).¹²

The TBTF2 going-concern look-through *leverage ratio requirements* imply that Credit Suisse and UBS need additional going-concern capital amounting to roughly CHF 10 billion each – assuming their total exposure remains constant. The big banks could cover the bulk of this capital requirement by issuing high-trigger CoCos, as both of them already almost meet the 3.5% CET1 capital requirement.

9 Going-concern loss-absorbing capital according to TBTF1 consists of CET1 capital and high-trigger contingent capital.

10 As per 1 July 2016, the big banks have to meet going-concern requirements of 3% (leverage ratio) and 10.75% (risk-weighted) as well as gone-concern requirements of 1% (leverage ratio) and 3.5% (risk-weighted). As going-concern instruments in excess of required amounts can be used to meet gone-concern requirements, the big banks would meet the phase-in requirements as per 1 July 2016.

11 As at the end of the first quarter 2016, Credit Suisse had not yet fully met the TBTF1 look-through risk-weighted requirements on total capital (cf. table 1).

12 Look-through requirements in this report are defined as the 'final' quantitative (based on current market shares and sizes) and qualitative requirements. Under TBTF2, these are the quantitative requirements applicable from the beginning of 2020 and the capital quality requirements without 'grandfathering'. Hence, under the look-through approach in this report, TBTF2 going-concern capital consists of CET1 capital and high-trigger CoCos with AT1 capital quality, whereas TBTF2 gone-concern instruments consist of high-trigger CoCos with Tier 2 capital quality, low-trigger CoCos and bail-in instruments.

REGULATORY CAPITAL RATIOS AND REQUIREMENTS

Look-through

Table 1

	Credit Suisse			UBS		
	Q1 2015 (as at FSR 2015)	Q1 2016	Require- ment as per 2019/2020	Q1 2015 (as at FSR 2015)	Q1 2016	Require- ment as per 2019/2020
Ratios under TBTF1 (in percent)						
TBTF1 going-concern capital ratio	13.0	14.2	13.0	14.9	16.8	13.0
TBTF1 total capital ratio	16.3	17.5	18.1	20.6	22.7	17.5
TBTF1 going-concern leverage ratio	3.4	4.1	3.1	3.2	4.0	3.1
TBTF1 total leverage ratio	4.2	5.1	4.3	4.5	5.4	4.2
Ratios under TBTF2 (in percent) *						
TBTF2 going-concern capital ratio	–	13.3	14.3	–	16.4	14.3
TBTF2 gone-concern capital ratio **	–	9.6	14.3	–	9.5	14.3
TBTF2 going-concern leverage ratio	–	3.9	5.0	–	3.9	5.0
TBTF2 gone-concern leverage ratio **	–	2.8	5.0	–	2.2	5.0
Ratios under TBTF2 (with grandfathering, in percent) ***						
TBTF2 going-concern capital ratio	–	17.5	14.3	–	22.7	14.3
TBTF2 gone-concern capital ratio	–	5.4	14.3	–	3.2	14.3
TBTF2 going-concern leverage ratio	–	5.1	5.0	–	5.4	5.0
TBTF2 gone-concern leverage ratio	–	1.6	5.0	–	0.8	5.0
Ratios under Basel III (in percent)						
Basel III CET1 capital ratio	10.0	11.4	8.5	13.7	14.0	8.0
Basel III Tier 1 leverage ratio	3.6	4.4	3.0	3.4	4.1	3.0
Levels (in CHF billions)						
TBTF CET1 capital	28.1	31.7	–	29.6	29.9	–
High-trigger contingent capital (HT CoCos)	8.9	8.3	–	2.6	6.1	–
Of which additional Tier 1	6.2	5.7	–	1.7	5.2	–
Of which Tier 2	2.7	2.6	–	0.9	0.9	–
Low-trigger contingent capital (LT CoCos)	9.2	9.2	–	12.3	12.6	–
Of which additional Tier 1	5.1	5.0	–	2.3	2.4	–
Of which Tier 2	4.1	4.2	–	10.0	10.2	–
Bail-in instruments	–	15.3	–	–	6.9	–
TBTF RWA	284	281	–	216	214	–
TBTF total exposure	1 103	970	–	991	906	–

* According to the look-through approach. Under this approach, the final quantitative and qualitative requirements are taken into account, i.e. the quantitative requirements applicable from the beginning of 2020 and the capital quality requirements without 'grandfathering' (cf. footnote ***). Hence, under the look-through approach in this table, TBTF2 going-concern capital consists of CET1 capital and HT CoCos with AT1 capital quality, whereas TBTF2 gone-concern instruments consist of HT CoCos with Tier 2 capital quality, LT CoCos and bail-in instruments.

** The gone-concern requirements for the two big banks of 5% (leverage ratio) and 14.3% (risk-weighted) may be reduced for two reasons: First, they may be reduced if the bank holds LT CoCos to meet these requirements. Second, FINMA may grant a rebate on these requirements. For further details, cf. 'National and international regulatory developments on loss absorbency', pp. 17–18.

*** Based on the grandfathering clause, all CoCos can be counted as going-concern capital up to maturity or until the first capital call. For CoCos with Tier 2 capital quality, however, such counting is only allowed until end-2019 at the latest (cf. art. 148 of the Capital Adequacy Ordinance). Under the grandfathering approach in this table, all existing CoCos are counted as going-concern capital.

Sources: Big banks' quarterly reports/presentations

The need for action is currently greatest with regard to *gone-concern requirements*, which have been increased significantly in line with international minimum requirements for TLAC. Again, assuming total exposure remains constant and not taking into account any possible reductions on gone-concern requirements – such as potential future rebates granted by FINMA and reductions due to holdings of low-trigger CoCos to meet these requirements – Credit Suisse and UBS would each have to issue gone-concern instruments in the range of CHF 20 billion to CHF 25 billion, or replace debt instruments that fall due with bail-in instruments.¹³

In terms of *risk-weighted going-concern requirements*, UBS already meets the requirement and Credit Suisse is very close to meeting it. Yet it is likely that RWA will increase in light of the measures drawn up by the Basel Committee – which include the introduction of RWA floors based on the revised standardised approach.¹⁴ These measures are aimed at reducing variability in RWA calculations with the objective of improving consistency and comparability in bank capital ratios. In an international comparison (cf. chart 10), the two big banks are among those with the lowest RWA density (the ratio of RWA to total exposure). Moreover, additional disclosure by the big banks suggests that their internal model-based RWA are also low compared to the RWA under the current standardised approach.¹⁵

13 The estimate of required gone-concern instruments is based on holdings of bail-in instruments, low-trigger CoCos and high-trigger Tier 2 CoCos as at Q1 2016 and gone-concern requirements of 5% (leverage ratio) and 14.3% (risk-weighted). For details of possible reductions on gone-concern requirements, as well as of TLAC and bail-in instruments, cf. 'National and international regulatory developments on loss absorbency', pp. 17–18.

14 Cf. 'National and international regulatory developments on loss absorbency', pp. 17–18.

15 Both Credit Suisse and UBS disclosed a comparison of the standardised and internal model-based approaches for calculating risk-weighted assets for credit risk (Credit Suisse, *Basel III – Pillar 3 – disclosures*, December 2015, pp. 7 et seq.; UBS, *Annual Report*, 2015, pp. 877 et seq.). Although the banks do not supply a precise quantitative comparison of RWA under both approaches, this information points to a significant increase in RWA when calculated according to the current standardised approach. Cf., for example, Credit Suisse, *Basel III – Pillar 3 –*

This expected RWA increase has been factored into the calibration of the TBTF2 requirements by assuming an RWA density of 35%.¹⁶ More clarity about the RWA increase is expected by end-2016, when the Basel Committee will decide on the design and calibration of the RWA reform measures. A precise quantitative comparison of RWA under both the model-based and the standardised approaches will be possible once the transparency requirements being drawn up by the Basel Committee in the context of its reforms have been introduced. The planned requirements specify that banks currently calculating their RWA using the model-based approach must also report them according to the standardised approach.

Market assessment

Market prices (e.g. CDS premia) and ratings reflect the market's or rating agencies' assessment of a bank's resilience. According to CDS premia,¹⁷ the market assesses the resilience of Credit Suisse as below, and that of UBS as above the median of large globally active banks. Following a marked decline after the peak of the European debt crisis in 2011/2012, CDS premia of both Swiss and other large globally active banks remained relatively stable until end-2015 (cf. chart 11). In the first quarter of 2016, the CDS premia of all of these banks – and in particular those of Credit Suisse – increased sharply in the wake of market turbulence at the beginning of the year (cf. chapter 2). This pointed to renewed concerns by market participants about the resilience of banks.

disclosures, December 2015, p. 12: "Overall, the Group's credit risk risk-weighted assets would be significantly higher under the standardized approach than under the internal model based approach."

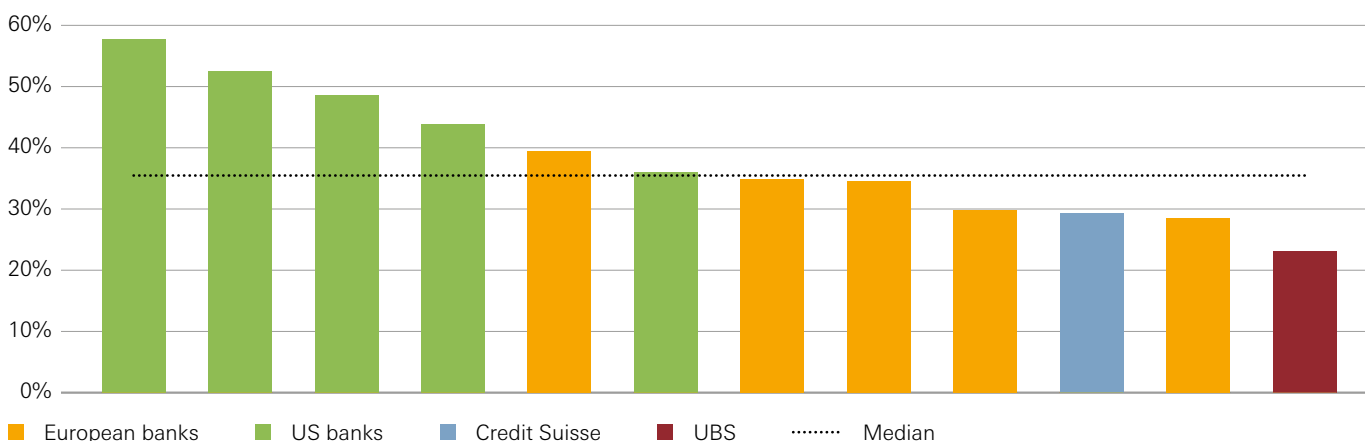
16 Cf. Federal Council, 'Erläuterungsbericht zu Änderungen der Eigenmittelverordnung und zur Bankenverordnung (Eigenmittelanforderungen Banken – Rekalibrierung TBTF und Kategorisierung)', 13 May 2016.

17 The greater the credit risk and the lower the assessment of resilience, the higher the premium on a given CDS. However, market prices include market expectations of government support in a crisis ('too big to fail' issue). CDS premia thus reflect the market's view of the likelihood that the underlying credit will be repaid. It is irrelevant who repays the investment – the bank or a third party, such as the government.

INTERNATIONAL COMPARISON OF RWA DENSITY

Risk-weighted assets in relation to total exposure, Q4 2015

Chart 10



Sources: Banks' quarterly reports and SEC filings (10-Q/10-K)

The rating agencies' assessment of banks' resilience is reflected in stand-alone ratings, which evaluate the intrinsic financial strength of the banks, assuming no external support is forthcoming. Overall, the resilience of Credit Suisse is rated slightly lower and that of UBS slightly higher compared to last year.¹⁸ By international standards, the stand-alone ratings of both Swiss big banks are comparable to those of other large globally active banks (cf. chart 12 for an illustration of the international comparison based on Moody's stand-alone ratings).

A longer-term comparison of Moody's stand-alone ratings shows that the median rating of large globally active banks is currently significantly below its level prior to the financial crisis. When comparing ratings over this period of time, methodology changes and some prior overestimation of banks' intrinsic soundness should be taken into account. Before the crisis, banks were generally considered to be sound due to high risk-weighted capital ratios and the benign financial conditions. Looking at current levels, the median rating of Baa2 ranks only two notches above non-investment grade and Moody's defines it as 'medium grade, with some speculative elements and moderate credit risk'. The rather low ratings and the importance of these large globally active banks highlight the necessity of the Basel Committee's and the FSB's measures for the continued strengthening of these banks' resilience.

In addition to stand-alone ratings, the rating agencies issue long-term credit ratings, which explicitly factor in the possibility of extraordinary government support (government support uplift) in the event of a crisis. Over the past year, all of the rating agencies completely removed this government support uplift at the holding

company level. At the operational level, Moody's continues to assume that Credit Suisse and UBS, along with most other European and US G-SIBs, benefit from a 'too big to fail' rating uplift (1 notch). S&P and Fitch have now removed this uplift at the operational level too, for all European (incl. UBS and Credit Suisse) and all US G-SIBs.

Rating agencies justified this move with reference to stricter conditions on the government's use of public funds for bank rescues and improved resolvability at banks. Every rating agency applies its own uplift policy. The rating assessment for long-term bonds is difficult and subject to uncertainties as to whether G-SIBs could be successfully resolved without government support. So far, the bail-in of a G-SIB's debt is still untested. The resolution authorities have not assessed any of the G-SIBs as being resolvable in an orderly manner. Among other things, most banks still have to build up the required volumes of bail-in instruments according to the FSB's termsheet. In Switzerland, the regulations require Swiss emergency plans for maintaining systemically important functions in Switzerland in a severe crisis as a mandatory measure to improve resolvability. The big banks need to finalise these plans by end-2019. Overall, full implementation of the regulatory reforms is necessary to resolve the 'too big to fail' issue – both in Switzerland and worldwide.

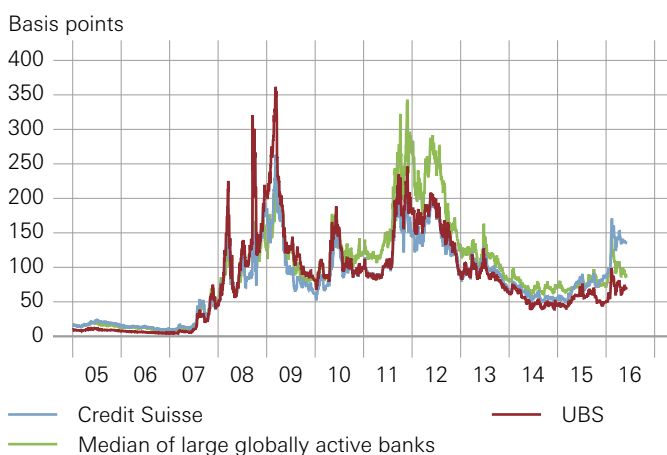
Although some rating agencies have completely removed the government support uplift, the same rating agencies do not rule out reintroducing this uplift in the future.¹⁹ Historical evidence indicates that rating agencies may increase government support uplifts quickly once banks

18 Credit Suisse: Standard & Poor's (S&P) rates the resilience of Credit Suisse as unchanged compared to last year, while Moody's and Fitch rate it as slightly lower (-1 notch). UBS: S&P and Fitch rate the resilience of UBS as unchanged compared to last year, while Moody's rates it as slightly higher (+1 notch).

19 Cf., for example, S&P, 'Most European Bank Ratings Affirmed Following Government Support And ALAC Review', December 2015, p. 5: "That said, if a systemic bank came under stress and we saw clear evidence that government support would be forthcoming, we could still reflect this 'additional short-term support' in the ratings on the bank."

INTERNATIONAL COMPARISON OF CDS PREMIA

Premia for credit protection (five-year senior) Chart 11



Source: Bloomberg

come under stress. This is illustrated by the development of Moody's government support uplift for UBS shortly before and during the last financial crisis (cf. chart 13). Up to mid-2007 – in other words, until shortly before government support was introduced – this uplift was non-existent. In the course of the crisis, the uplift was gradually increased to three notches.²⁰

Regulatory reforms will result in increased resilience

National and international efforts to reform rules on loss-absorbing capacity will result in a further strengthening of the Swiss big banks' resilience. In view of their systemic

importance, the SNB considers this strengthening to be essential for two reasons.

First, the big banks' loss potential relative to their capitalisation continues to be substantial, both under the adverse scenarios considered by the SNB and when measured on the basis of the losses experienced during the last financial crisis.²¹ It is important that the big banks remain adequately capitalised, even in the event of such losses occurring.

Second, while leverage ratios at both Swiss big banks have improved by international standards, their Basel III Tier 1 leverage ratios are still below the average for large globally active banks. The revised 'too big to fail' regulations (TBTf2) are designed to ensure that Switzerland's big

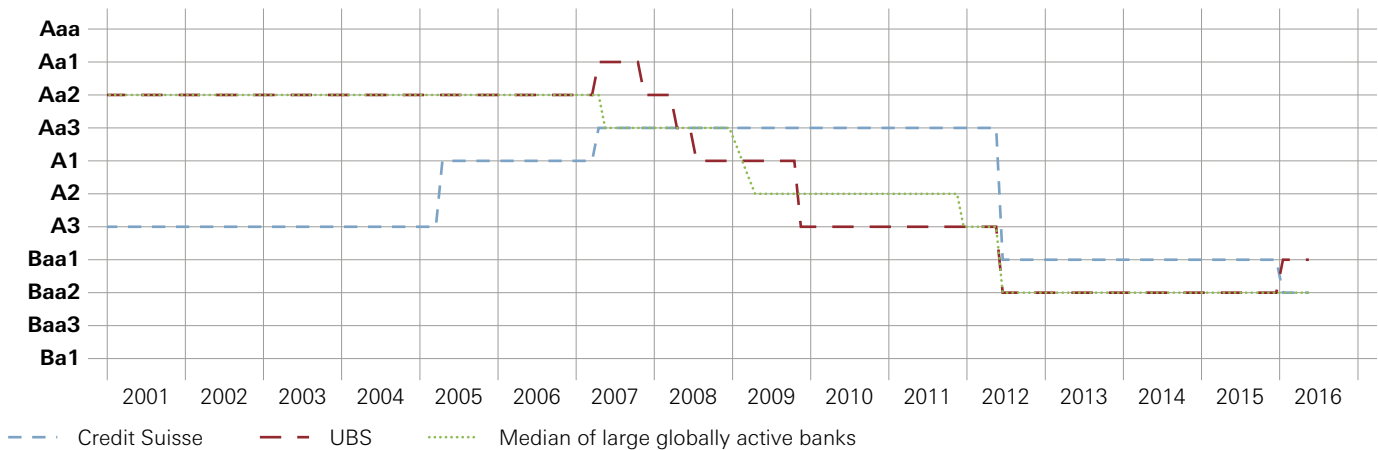
20 It is important to note that the rating methodology was changed several times during this period, particularly in 2007 and 2015. As a result of the changes in 2007, the process by which the stand-alone rating and assumed support are determined became more systematic and transparent. As a result of the changes in 2015, only part of the difference between the long-term and stand-alone rating is now attributable to government support. This fact has been taken into account in chart 13, which only shows the uplift attributable to government support.

21 For an estimate of losses in the last financial crisis, cf. Bank of England, 'The Financial Policy Committee's review of the leverage ratio', October 2014. This paper estimated that losses were up to 9% of banks' balance sheets.

STAND-ALONE RATINGS OF CREDIT SUISSE, UBS AND LARGE GLOBALLY ACTIVE BANKS

Moody's, baseline credit assessment

Chart 12

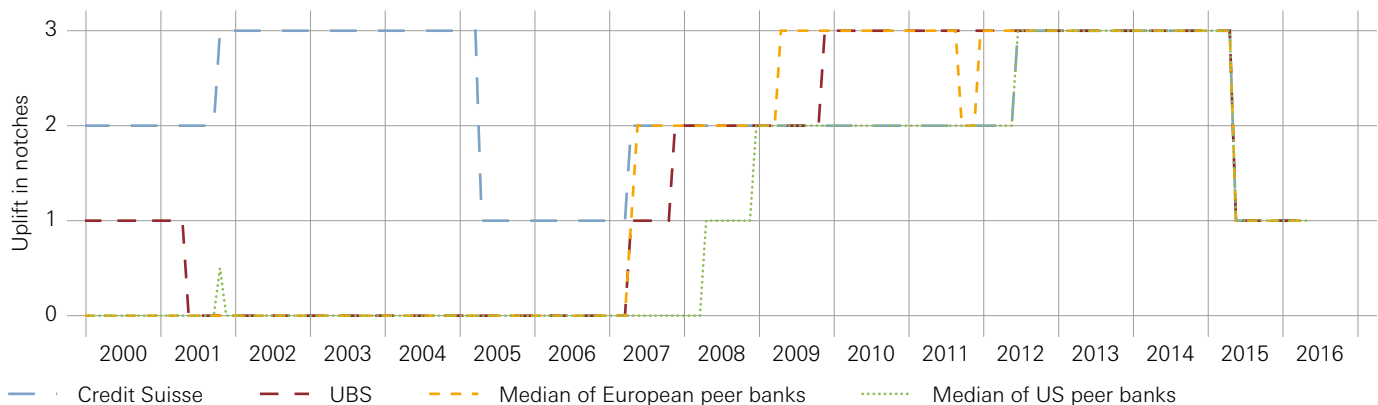


Sources: Bloomberg, Moody's

GOVERNMENT SUPPORT UPLIFT OF CREDIT SUISSE, UBS AND LARGE GLOBALLY ACTIVE BANKS*

Moody's

Chart 13



* Difference between senior unsecured rating (long-term rating) and baseline credit assessment (stand-alone rating) attributable to the expectation of extraordinary government support.

Sources: Bloomberg, Moody's, SNB calculations

National and international regulatory developments on loss absorbency

Regulatory developments at national level

On the basis of the evaluation report of February 2015¹ on the Swiss 'too big to fail' provisions, and of the parameters set in October 2015,² the Federal Council approved a revision of the 'too big to fail' regulations in May 2016 (TBTF2). The revision will apply from 1 July 2016, with a phase-in period until end-2019. It particularly addresses aspects of loss absorbency, thereby increasing the resilience of systemically important banks in Switzerland and improving the international comparability of the regulations.

The revision comprises, first, a *substantial increase in going-concern requirements – particularly with respect to the leverage ratio* (cf. charts B1 and B2). These requirements are designed to be progressive and depend on market share and size. Based on current market shares and sizes,³ the two big banks will now have to meet going-concern leverage ratio requirements of 5% and risk-weighted requirements of 14.3%, while the three domestically focused systemically important banks will have to meet going-concern leverage ratio requirements in the range of 4.5–4.6% and risk-weighted requirements in the range of 12.9–13.2% (cf. table B1). As before, the going-concern requirements comprise minimum and buffer requirements. The minimum requirements have been brought into line with the corresponding Basel III requirements of 3% (leverage ratio) and 8% (risk-weighted), to improve their international comparability.

Second, the revision also comprises a *substantial increase in the gone-concern requirements for the two big banks*. Their gone-concern requirements now mirror their going-concern requirements (cf. table B1 and charts B1 and B2).⁴ Although a need for gone-concern requirements applying to domestically focused systemically important banks has been identified in the context of the 'too big to fail' revision, the revised set of rules does not yet include any such requirements for these banks.⁵ The design and calibration of gone-concern requirements will be defined in the context of the next biannual reassessment and revision of the 'too big to fail' framework. It will be the subject of the Federal Council's evaluation report to be issued by end-February 2017. Overall, the new going-concern and gone-concern requirements will put Switzerland back among the international leaders as regards regulatory loss-absorbing capacity. Given that, in an international comparison, the two Swiss big banks are particularly large relative to the economy, such an increase is essential.

Third, *the requirements on capital quality have been adjusted* (cf. charts B1 and B2). On one hand, going-concern capital quality requirements have been strengthened. Going-concern capital now includes only Common Equity Tier 1 (CET1) capital and high-trigger contingent capital instruments (HT CoCos) with additional Tier 1 (AT1) capital quality. HT CoCos with Tier 2 capital quality no longer qualify as

1 Cf. Federal Council, 'Too big to fail', 18 February 2015.

2 Cf. Federal Council's media release of 21 October 2015.

3 The calibration is based on current market shares between 19.5% and 19.9% and on the targets for the leverage ratio exposure measure between CHF 900 billion and CHF 975 billion. Cf. Federal Council, 'Erläuterungsbericht zu Änderungen der Eigenmittelverordnung und zur Bankenverordnung (Eigenmittelanforderungen Banken – Rekalibrierung TBTF und Kategorisierung)', 13 May 2016.

4 The gone-concern requirements for the two big banks of 5% (leverage ratio) and 14.3% (risk-weighted) may be reduced for two reasons: First, they may be reduced if the bank holds low-trigger contingent capital instruments (LT CoCos) to meet these requirements (cf. art. 132 of the Capital Adequacy Ordinance). The original gone-concern requirements would each be reduced by the share of these CoCos in total exposure or RWA, multiplied by a factor of 0.5. The reduction is limited to 1% (leverage ratio) or 2.9% (risk-weighted). Second, FINMA may grant a rebate on these requirements for measures aimed at improving the big banks' global resolvability (cf. art. 133 of the Capital Adequacy Ordinance). After applying these two types of reductions, however, gone-concern requirements must not fall below international requirements.

5 Cf. Federal Council, 'Erläuterungsbericht zu Änderungen der Eigenmittelverordnung und zur Bankenverordnung (Eigenmittelanforderungen Banken – Rekalibrierung TBTF und Kategorisierung)', 13 May 2016.

GOING-CONCERN AND GONE-CONCERN REQUIREMENTS FOR REVISED TBTF REGULATIONS (TBTF2)

Look-through, in percent, rounded

Table B1

	Going-concern		Gone-concern	
	Leverage ratio	Risk-weighted	Leverage ratio	Risk-weighted
Credit Suisse	5.0	14.3	5.0	14.3
UBS	5.0	14.3	5.0	14.3
Raiffeisen	4.6	13.2	tbd	tbd
Zürcher Kantonalbank	4.5	12.9	tbd	tbd
PostFinance	4.5	12.9	tbd	tbd

Source: Federal Council, 'Erläuterungsbericht zu Änderungen der Eigenmittelverordnung und zur Bankenverordnung (Eigenmittelanforderungen Banken – Rekalibrierung TBTF und Kategorisierung)', 13 May 2016.

going-concern capital.⁶ On the other, the requirements on gone-concern capital quality have been eased. To meet gone-concern requirements, the big banks may continue to hold low-trigger contingent capital instruments (LT CoCos), which also benefit from preferential treatment in the form of lower gone-concern requirements.⁷ However, in line with international standards for total loss-absorbing capacity (TLAC), banks are allowed to use bail-in instruments to fulfil the gone-concern requirements.⁸ These instruments do not represent capital, but debt instruments, which are specially designed to recapitalise a bank in a resolution. Unlike LT CoCos, bail-in instruments have lower quality requirements and, in particular, they do not have a quantitative trigger. Bail-in instruments are only written off or converted into equity – and thus loss-absorbing – in a resolution and following an order from FINMA. Nevertheless, bail-in instruments have to fulfil certain quality requirements – among other things, contractual bail-in clauses have to be included.⁹ Overall, these adjustments to capital quality requirements also serve to improve the international comparability of the Swiss ‘too big to fail’ regulations.

6 During the phase-in period, banks are allowed to grandfather existing CoCos, i.e. all outstanding CoCos are recognised as going-concern capital.
 7 Cf. footnote 4, p. 17.
 8 Previously, gone-concern requirements had to be met with LT CoCos.
 9 Cf. art. 126a of the Capital Adequacy Ordinance for the set of quality requirements on bail-in instruments.

Regulatory developments at international level

At international level, the FSB finalised the minimum TLAC requirements for G-SIBs at end-2015. As of 2019, G-SIBs must meet risk-weighted TLAC requirements of at least 16% (of which 8% Basel III capital minimum and 8% bail-in instruments) and unweighted (leverage ratio) TLAC requirements of at least 6% (of which 3% Basel III capital minimum and 3% bail-in instruments). As of 2022, these requirements will increase to at least 18% and at least 6.75% respectively.

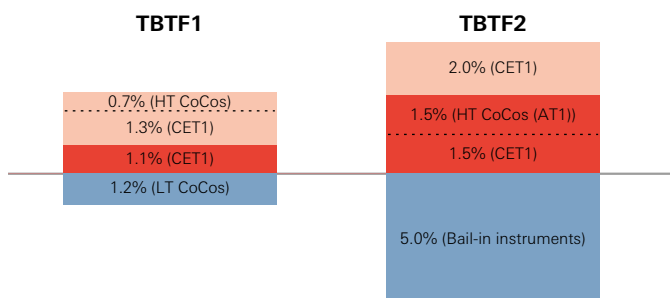
In addition, the Basel Committee is working on reforms to leverage ratio requirements and risk-weighted capital requirements. At the beginning of 2016, the Committee confirmed a 3% minimum requirement for the Basel III Tier 1 leverage ratio, which will have to be complied with from 2018 onwards. It is also considering a higher requirement for G-SIBs.

The reforms on risk-weighted capital requirements include, in particular, a fundamental review of the standardised approach and the introduction of floors for model-based risk-weighted assets (RWA). The reforms are aimed at reducing the excessive variability in – and thereby restoring the credibility of – RWA. Moreover, higher requirements in terms of bank transparency are planned, specifying that banks which calculate RWA according to the model-based approach must in future also report them according to the standardised approach. The Basel Committee’s reforms are due to be completed and published by end-2016.

TBTF LEVERAGE RATIO REQUIREMENTS

Based on market share of 20% and total exposure of CHF 1,000 billion

Chart B1



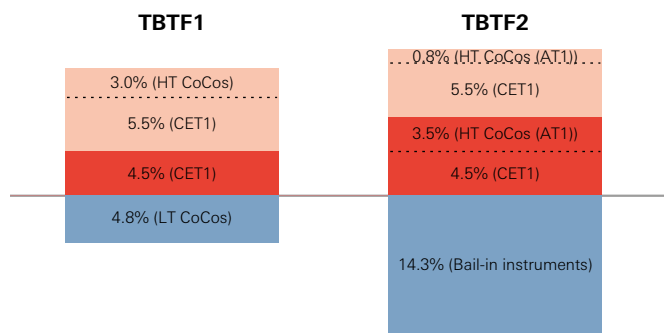
■ Gone-concern requirement ■ Buffer (going-concern)
 ■ Minimum requirement (going-concern)

Source: SNB

TBTF RISK-WEIGHTED CAPITAL REQUIREMENTS

Based on market share of 20% and total exposure of CHF 1,000 billion

Chart B2



■ Gone-concern requirement ■ Buffer (going-concern)
 ■ Minimum requirement (going-concern)

Source: SNB

banks are among the international leaders with respect to their leverage ratios in future. Further improving the leverage ratio, including in an international comparison, is of particular significance given that the ratio is gaining in importance as a measure of banks' resilience and that, as experience has shown, it can quickly become the focus of market attention during a crisis.

The SNB therefore welcomes and supports the regulatory reforms, and will continue to be actively involved in their finalisation. The combined package of national and international reforms represents a decisive step in the overall process to resolve the 'too big to fail' issue in Switzerland.

3.2 DOMESTICALLY FOCUSED COMMERCIAL BANKS

In 2015, lending volumes on the Swiss mortgage market recorded weaker growth than in the previous year. This slowdown can essentially be attributed to the two big banks. Real estate prices also increased at a slower pace. Yet the imbalances on these markets have increased slightly, due to comparatively weaker developments in fundamentals such as GDP, population growth and rents. Against this background, the exposure of domestically focused banks to the Swiss mortgage and residential real estate markets increased substantially. Mortgage lending growth at domestically focused banks remained strong. Moreover, the share of new loans with high LTI ratios, as well as these banks' interest rate risk exposure from maturity transformation, increased further.

Despite this increase in exposure and the pressure from historically low interest rate margins on profitability, domestically focused banks' resilience did not deteriorate in the course of last year and remains adequate. First, the regulatory capitalisation of these banks improved again in 2015. Domestically focused banks' available capital increased significantly faster than their RWA and by slightly more than the size of their balance sheets. Hence, their risk-weighted capital ratios have increased and are significantly above regulatory minimum requirements overall. Moreover, their leverage ratios have increased slightly compared to 2014, and remain high by historical standards.

Second, stress test results suggest that most banks' capital surplus, relative to the regulatory minimum requirements, is large enough to absorb the losses related to relevant adverse scenarios. Significant capital surpluses are particularly important in the current situation characterised by mortgage and real estate market imbalances and exceptionally low interest rates. These surpluses should be preserved going forward. Hence, banks should ensure that they are able to absorb the potential losses associated with significant adverse shocks when defining their capital plans and their lending or interest rate risk policy.

The next section outlines the exposures and loss potential of domestically focused banks. Chapter 3.2.2 provides an assessment of these banks' resilience, focusing on the development of the regulatory capital figures and an appraisal of the banks' capitalisation from an economic point of view.

3.2.1 EXPOSURES AND IMPACT OF SCENARIOS Slight increase in imbalances on Swiss mortgage and residential real estate markets

Momentum on the mortgage and owner-occupied residential real estate markets continued to slow in 2015. Mortgage volume growth for the market as a whole has decreased, to 2.6% at end-2015 (from 3.6% at end-2014). Meanwhile, growth in transaction prices has declined, to 0.9% for apartments and 1.6% for single-family houses at end-2015 (from 2.5% for apartments and 3.3% for single-family houses at end-2014).²²

Owing to comparatively weak growth in fundamentals, imbalances on the mortgage and owner-occupied residential real estate markets increased slightly in 2015, despite lower momentum on these markets. On the mortgage market, imbalances as measured by the difference between the mortgage-to-trend GDP ratio and its long-term trend have increased slightly from an already high level. On the real estate market, prices for apartments have risen faster than can be explained by fundamentals such as rents, GDP or population growth. As a result, imbalances in the apartment sector have also increased slightly from an already high level (cf. chart 9 in chapter 2).

In the residential investment property segment, the ongoing fall in gross initial yields²³ (i.e. the ratio of rental returns to transaction prices) also points to an increasing risk of substantial price corrections in the future. In 2015, gross initial yields declined further and they now lie at historically low levels. Together with slightly rising rents, falling gross initial yields imply that transaction prices continued to rise last year. From an investor's perspective, the high demand for investment property is rational in the short term as the general level of interest rates and the yields on alternative investments have decreased further. However, in the event of an interest rate increase, the same mechanism will work in the opposite direction. In this case, prices are likely to fall, putting leveraged investors – as well as the banks providing the funding for such investors – under pressure.

Data for the first quarter of 2016 suggest that momentum on the mortgage market has continued to slow. By contrast, most indicators show higher price growth in the owner-occupied segment of the residential real estate market. In the residential investment property segment, too, prices appear to have risen further: initial yields have continued to fall, despite higher rents.

²² Source: Wüest & Partner.

²³ Ibid.

Strong mortgage growth at domestically focused banks

In contrast to the market as a whole, mortgage volume growth at domestically focused banks did not show any slowdown in 2015. It was almost unchanged at 4.3%, well above the growth in GDP. However, the development of growth rates among domestically focused banks was heterogeneous.

The share of new mortgage loans with high LTV ratios has remained broadly unchanged ...

According to the survey of mortgage lending conducted by the SNB,²⁴ the share of new mortgage loans²⁵ with an LTV ratio of more than 80% remained broadly unchanged in 2015 compared to 2014 (cf. chart 14). Between 2012 and 2014, this share declined markedly.

In 2015, the share of new mortgages with an LTV ratio²⁶ of more than 80% was 16% in the owner-occupied residential property segment, or 9% in net terms.²⁷ For residential investment property held by private individuals and commercial borrowers, the share of new mortgages with an LTV ratio of more than 80% was 9% and 14% respectively.

24 The survey covers the 25 largest banks with a cumulative share of the domestic mortgage market of over 80%. LTV and LTI data are collected for new mortgages in the segments of owner-occupied residential property (2015: CHF 30.2 billion) and residential investment property held by commercial borrowers (CHF 8.7 billion) or private individuals (CHF 10.1 billion). The values displayed are aggregated over the calendar year according to mortgage lending volume.

25 For the purpose of the survey, new lending comprises both refinancing of an existing mortgage from another lender and newly granted loans for the purchase or construction of real estate.

26 The reported LTV is the ratio between the mortgage and the value of the pledged property. The mortgage is the credit limit approved by the bank. The value of the pledged property is the market value. At most banks, LTVs calculated in this manner differ only slightly from reported LTVs based on banks' internal valuations of the pledged property.

27 When calculating net figures, pledges from pillar 2 and 3a pension funds used as part of the scheme to encourage home ownership are counted as additional collateral in the LTV calculation. It should, however, be noted that the effectiveness of the protection provided by such additional collateral against credit losses in the banking sector in the event of a major price correction in the Swiss real estate market remains untested.

While this development is positive from a risk assessment perspective, credit risk did not decrease as strongly between 2012 and 2015 as might be inferred from the decline in the share of new mortgages with an LTV ratio of more than 80%. In fact, the concentration of new mortgages with an LTV ratio of slightly below 80% has risen. For example, in the owner-occupied residential segment, the share of new mortgages with an LTV ratio of between 75% and 80% increased from 16% to 19% between 2012 and 2015. Moreover, imbalances on the residential real estate market increased during the same period. This means that, for any given LTV ratio, the risk density of new mortgages rose over that period.

... and affordability risks have increased from high levels

Affordability risks measured by the LTI ratio have increased from high levels. In 2015, the share of new mortgages with high LTI ratios reached its highest values since the launch of the SNB survey in 2011 (cf. chart 15).

In the owner-occupied residential property segment, the share of new mortgages where imputed costs²⁸ would exceed one-third of gross wage or pension income at an interest rate of 5% has risen from 42% to 44%.²⁹ Similarly, in the segment of residential investment property held by private individuals, the share of new mortgages where imputed costs would no longer be covered by net rents at

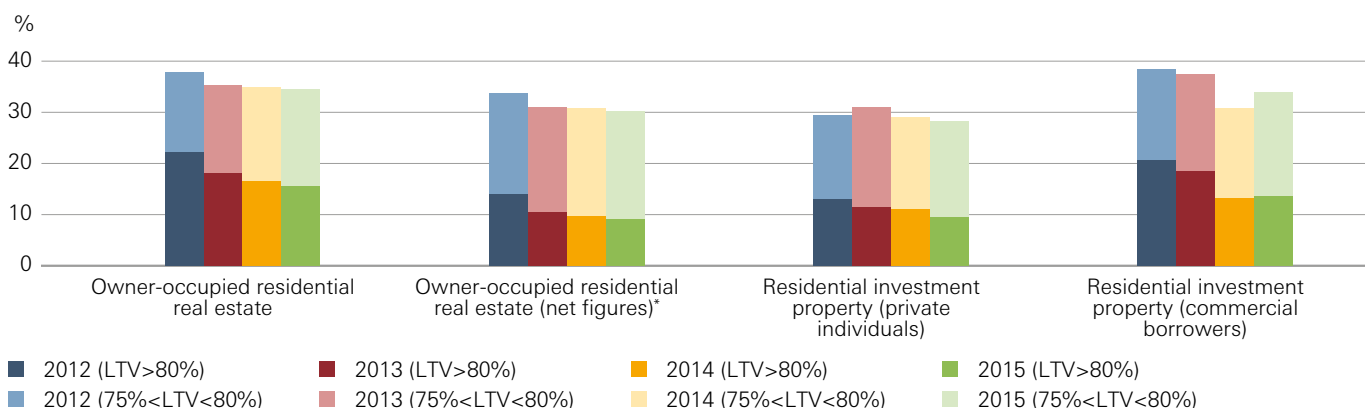
28 The imputed costs used for this estimate comprise the imputed interest rate (5%) plus maintenance and amortisation costs (1% each). The average mortgage rate over the last 50 years is almost 5%.

29 When interpreting these figures, it should be borne in mind that they are based on a standardised definition of income and hence can deviate from a bank's own measure of affordability risk based on internal definitions. The standardised definition of income uses only the borrower's employment or pension income. Other elements which have a positive impact on affordability (e.g. bonuses and investment income), as well as those which have a negative impact (e.g. leasing or interest payments on other bank loans), are not taken into consideration. On average, eligible income according to internal bank guidelines exceeds standardised income by 15–20%; however, differences between banks are considerable. As banks apply different credit policies, the income calculated according to banks' internal guidelines – in contrast to standardised income – is neither directly comparable between banks, nor can it be used for calculating aggregate LTI values.

LOAN-TO-VALUE: NEW MORTGAGES

Proportion of new loans with LTV over 80% and between 75% and 80%

Chart 14



* When calculating net figures, pledges from pillar 2 and 3a pension funds used as part of the scheme to encourage home ownership are counted as additional collateral in the LTV calculation.

Source: SNB

an interest rate of 5% has risen from 42% to 44%. A more pronounced increase, albeit from a lower level, has been observed in residential investment property held by commercial borrowers, where the corresponding share has increased from 32% to 37%. The increase in affordability risks across all segments is also visible when different imputed interest rates are used.

Against the background of rising affordability risks, it is important to note that an interest rate change would affect a very high proportion of the mortgage volume in the short or medium term. While the trend towards a higher proportion of loans with a repricing maturity of more than five years has continued, the corresponding share still only amounts to just over 25% of the outstanding mortgage volume. Consequently, almost 75% of the mortgage volume would be affected by an interest rate shock over a five-year time horizon. Moreover, around 35% of the mortgage volume has a repricing maturity that is shorter than 12 months.³⁰

Affordability risks may not only materialise in the event of an interest rate correction, but also in the event of a price correction on the real estate market. Banks may react to a fall in real estate prices by demanding additional collateral from borrowers or by adding a risk premium to the interest rate. In principle, leveraged investors in all segments of the real estate market may face such margin calls. However, banks are more likely to adopt a strict margin call policy for no-recourse loans to firms in the residential investment property segment.

Interest rate margin has stabilised at a low level

In 2015, the average interest rate margin³¹ on outstanding claims of domestically focused banks stabilised at a low level. The stabilisation followed a seven-year downward trend, during which the average interest rate margin declined by more than 50 basis points or about one-quarter (cf. chart 16).

This stabilisation occurred despite liability margins³² slipping further into negative territory in 2015. Following the SNB's decision in early 2015 to reduce the interest rate on sight deposits at the central bank to -0.75%, most capital and money market interest rates dropped (further) below zero and have stayed negative since then. In contrast, interest rates on sight and savings deposits for retail customers – banks' main funding source – have remained broadly unchanged at levels close to zero. As a consequence, domestically focused banks' overall funding costs have decreased by much less than capital and money market interest rates.³³

Domestically focused banks reacted to the pressure on the interest rate margin by increasing their asset margins³⁴ on newly extended mortgages (cf. chart 17). Asset margins grew by about 50 basis points in early 2015 and have remained broadly unchanged since then. Moreover, as indicated by the rise in interest rate risk, these banks expanded their maturity transformation in 2015. This increase may, in particular, reflect a rise in the average repricing maturity of outstanding mortgages. The increase

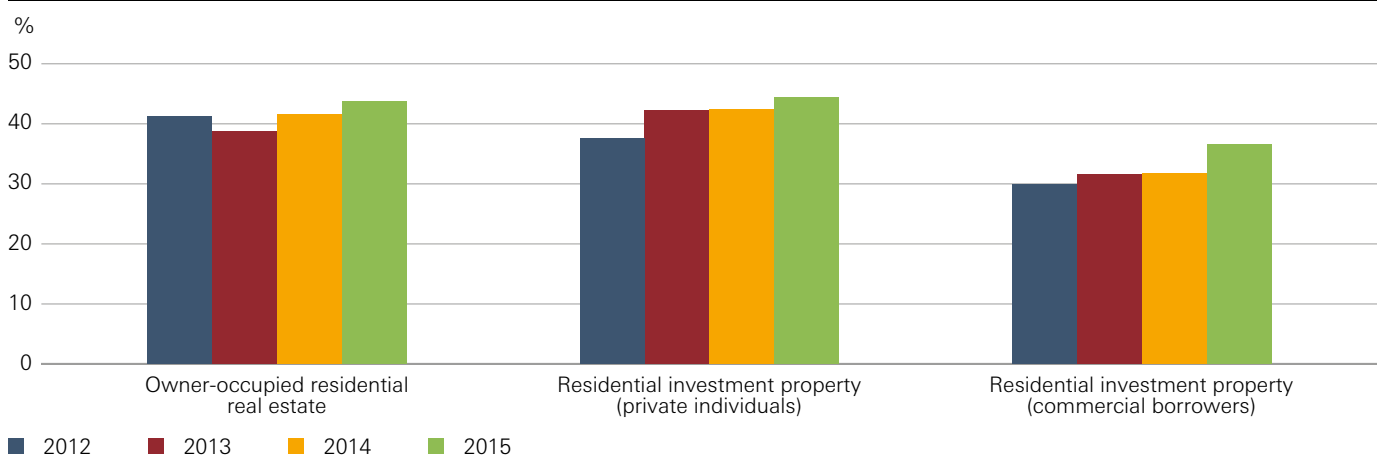
30 Source: SNB statistics. Figures refer to the sample covered by the survey of mortgage lending conducted by the SNB.

31 Interest rate margins are approximated as net interest income divided by the sum of mortgage claims, claims against customers and financial claims.
 32 The liability margin is the difference between alternative funding costs for the same maturity on the capital market and the interest paid on the liability.
 33 There was no significant direct impact on interest rate margins at domestically focused banks from negative interest levied on sight deposits at the SNB exceeding a certain exemption threshold, as most of these banks' sight deposits are below the relevant threshold.
 34 The asset margin is the difference between the interest on the asset and that on the alternative asset with the same maturity on the capital market. For new mortgages, the asset margin is approximated as the difference between the mortgage rate and the swap rate for the same maturity.

LOAN-TO-INCOME: NEW MORTGAGES

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

Chart 15



Source: SNB

in the share of mortgages with a remaining term to maturity of more than five years from 24% at end-2014 to around 27% at end-2015 is a strong hint in this direction.

Uncertainty around banks’ capacity to maintain current level of interest rate margins

The stabilisation of interest rate margins in the current low interest rate environment is a notable and, at the same time, fragile outcome. Should domestically focused banks be unable to keep asset margins on new mortgages at the current, higher level – due to an increase in competition between banks and from non-banks in the search for positive yields – their net interest income could fall significantly.

Moreover, assuming unchanged repricing maturities on the assets and liabilities sides, the positive contribution of maturity transformation to the interest rate margin will decrease in an environment of prolonged negative interest rates, as mortgages and other loans contracted in the past are renewed at lower interest rates. The longer the period of exceptionally low rates, the stronger the impact on the interest rate margin.

High level of maturity transformation exposes banks to large interest rate shocks

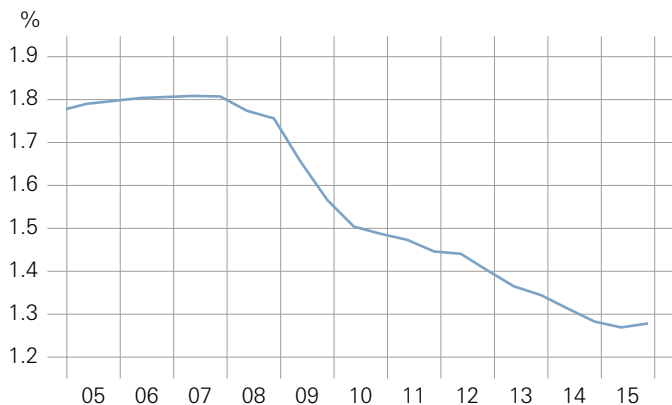
Interest rate risk³⁵ from maturity transformation in the banking book³⁶ of domestically focused banks – as measured by the impact of a positive interest rate shock on the banks’ net present value (NPV) – increased from a high level in 2015. The increase can be observed irrespective of whether banks’ own assumptions or fixed replications for positions without contractually defined

35 Cf. ‘Interest rate risk’, pp. 26–30, for a detailed discussion about the assessment of interest rate risk for domestically focused banks.

36 The interest rate risk measure includes all positions in the banking book (excluding non-linear derivatives), plus the securities and precious metals trading portfolio, less short securities positions.

INTEREST RATE MARGIN OF DOMESTICALLY FOCUSED COMMERCIAL BANKS

Weighted average Chart 16



Sources: FINMA, SNB

repricing maturities³⁷ are used. In the case of the latter, interest rate risk reached a new historical high (cf. chart 18).³⁸

On average, the NPV of domestically focused banks measured using their own assumptions would have declined by 15.4% of their Tier 1 capital at end-2015 if the general level of interest rates had risen by 200 basis points (end-2014: 13.9%). The median decline in NPV stood at 11.8% at end-2015, higher than at end-2014 (10.4%). Using fixed assumptions, the NPV would have declined by roughly twice as much as when using banks’ own assumptions.

These figures do not fully reflect the fact that, in the current environment, banks would benefit from the restoration of liability margins when interest rates move up (cf. ‘Interest rate risk’, pp. 26–30). They therefore tend to overestimate banks’ exposure to low or medium upward shocks in interest rates. However, they highlight banks’ substantial exposure to large upward interest rate shocks. Given banks’ high level of maturity transformation, their net interest income would significantly decline in the event of a large upward shock, despite the restoration of their liability margins.

Substantial losses under euro area debt crisis scenario

Two of the scenarios discussed in chapter 2.2 are of particular relevance for domestically focused banks: the euro area debt crisis scenario and the interest rate shock scenario.³⁹

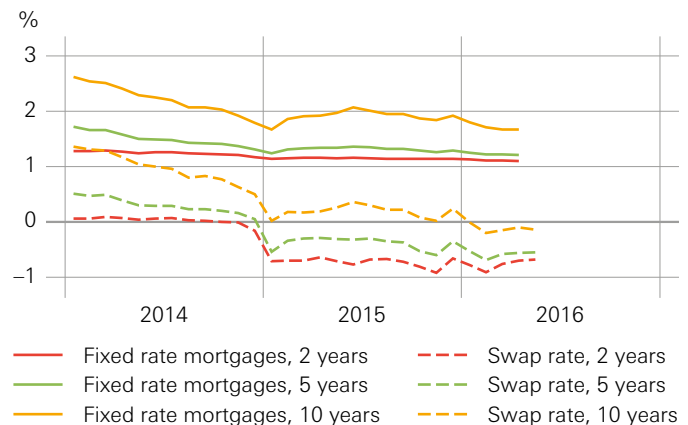
37 Positions with undefined repricing maturities include: on the assets side, sight claims, claims against customers and variable rate mortgage claims; on the liabilities side, sight liabilities and savings deposits.

38 PostFinance has been included in the sample considered in the graph since end-2013.

39 Irrespective of the scenarios considered, losses can also result from operational and legal risks.

PUBLISHED INTEREST RATES ON NEW FIXED RATE MORTGAGES AND SWAP RATES

Equally weighted average Chart 17



Sources: Bloomberg, SNB (ZISA survey)

Under the euro area debt crisis scenario, a severe recession extending over several quarters would result in a considerable increase in default rates on claims against corporates and financial institutions. Moreover, banks would suffer losses on their mortgage portfolios due to falling real estate prices and rising unemployment. As interest rates remain low under this scenario, however, the need for write-downs on residential and commercial mortgage loans would be moderate. While net interest income would suffer from the sustained negative liability margin as a result of the persistently low interest rate level, commission business would mainly be depressed by the weak performance of the stock markets. Net interest income and commission income are key components of domestically focused banks' total income, accounting for around 70% and 20% respectively.

The interest rate shock scenario, by contrast, should not lead to a reduction of domestically focused banks' aggregate earnings compared to the baseline scenario. This scenario's impact on individual banks is very heterogeneous, however. About half of them would suffer a decline in net interest income – despite the restoration of their liability margins – and moderate credit losses due to the sudden normalisation of interest rates. For a number of banks with pronounced maturity transformation, the reduction in net interest income would be significant. Conversely, for the other half, net interest income would increase as the reduction of the margin from maturity transformation⁴⁰ would be more than offset by the positive impact of the restoration of the liability margin; this increase in net interest income would more than outweigh credit losses.

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

While, overall, these results suggest that the impact of the interest rate shock scenario would be mild, they have to be put into perspective as the impact of shocks on the banking system is highly non-linear. This holds particularly for interest rate shocks in the current environment, owing to the negative liability margin issue discussed above. The larger the interest rate shock, the higher the proportion of banks for which the reduction of the margin from maturity transformation would outweigh the positive impact of the restored liability margin, leading to a broad-based decrease in net interest income (cf. 'Interest rate risk', pp. 26–30).

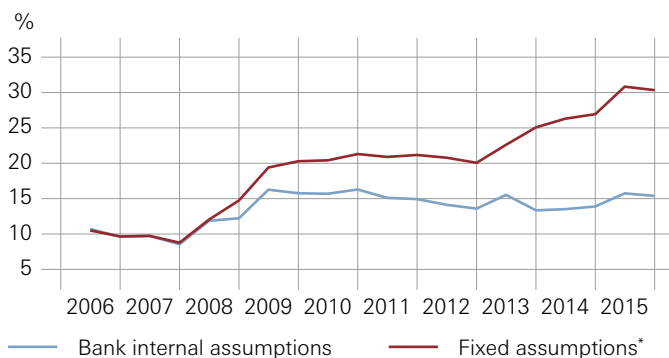
3.2.2 RESILIENCE

Capital ratios significantly above regulatory minimum requirements

Overall, the regulatory capital situation of domestically focused commercial banks has improved compared to last year. Measured against the regulatory minimum requirements, these banks are holding substantial surplus capital. At end-2015, all domestically focused banks met the Basel III minimum requirement of 8% for the risk-weighted total capital ratio. Most banks had a capital surplus of more than 5 percentage points. For domestically focused banks with a cumulative share amounting to 30% of the total leverage ratio exposure of these banks, this capital surplus exceeded 10 percentage points (cf. chart 19).

INTEREST RATE RISK OF DOMESTICALLY FOCUSED COMMERCIAL BANKS

Losses in NPV with 200 bp interest rate rise and different replication assumptions; as percentage of Tier 1 capital Chart 18

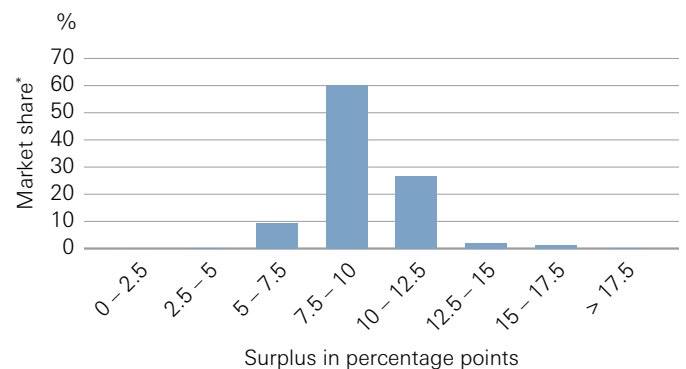


* Assumed repricing maturities of 1.5 years for savings deposits and variable rate mortgage claims, and of 15 days for sight deposits.

Sources: FINMA, SNB

RISK-WEIGHTED CAPITAL RATIOS OF DOMESTICALLY FOCUSED COMMERCIAL BANKS

Capital surplus with respect to the Basel III 8% minimum requirement for risk-weighted total capital ratios Chart 19



* Share of domestically focused banks' total leverage ratio exposure.

Sources: FINMA, SNB

At end-2015, all domestically focused banks also complied with the additional capital requirements associated with the increased CCyB⁴¹ and the institution-specific capital buffer target levels set by FINMA.⁴² Moreover, the Raiffeisen Group as well as the Zürcher Kantonalbank, for which institution-specific leverage ratio requirements applied at end-2015, met these requirements⁴³ by a significant margin.⁴⁴ For PostFinance, the leverage ratio requirements will only apply from the beginning of July 2016.

In 2015, domestically focused banks' capital increased by slightly more than the size of their balance sheets. Hence, despite pressure from historically low interest rate margins on profitability and the continued expansion of their balance sheets, their average leverage ratio – in terms of the ratio of Tier 1 capital to Basel III leverage ratio exposure⁴⁵ – grew slightly to 6.9% at end-2015 (from 6.7%, cf. chart 20) and has remained high, on average, by historical standards. The growth in the capital base was the result of profit retention as well as capital measures by several domestically focused banks.

41 In January 2014, acting on a proposal by the SNB, the Federal Council increased the sectoral CCyB from 1% to 2% of risk-weighted positions financing residential property in Switzerland.

42 These include the capital buffer target levels set according to supervisory category (applicable from end-2016, cf. FINMA Circular 2011/2) as well as the institution-specific capital buffer requirements applying to systemically important banks (applicable with effect from the issuance of the decree for the institution concerned). These requirements go beyond the Basel III requirements for all banks, except those pertaining to supervisory category 5, which includes the smallest banks and the banks with the lowest risk exposure.

43 Sources: Annual reports for 2015.

44 As from the beginning of July 2016, systemically important banks will be subject to revised 'too-big-to-fail' requirements. For domestically focused systemically important banks, these revisions will, in particular, entail higher requirements for the leverage ratio. The leverage ratio requirement in terms of Tier 1 capital will amount to at least 4.5% (cf. 'National and international regulatory developments on loss absorbency', pp. 17–18).

45 A bank's Basel III leverage ratio exposure measure incorporates on and off-balance-sheet exposures (for further details cf. Basel Committee on Banking Supervision, 'Basel III leverage ratio framework and disclosure requirements', January 2014).

The risk-weighted capital ratio increased to 17.4% in terms of total eligible capital (2014: 16.6%) and to 16.5% in terms of Tier 1 capital (2014: 15.8%). In 2015, domestically focused banks' capital thus grew significantly faster than their RWA.

Stress test results highlight importance of large capital surpluses

Regulatory capital ratios may overestimate the actual resilience of these banks in the current environment, as they do not fully capture risks associated with exposures to the mortgage and real estate markets and to movements in interest rates. In particular, risk-weighted capital ratios only partially account for the imbalances on Swiss mortgage and real estate markets that have built up over a number of years (cf. *Financial Stability Reports* from 2012 to 2014). For this reason, the adequacy of domestically focused banks' capital buffers is also assessed by means of stress tests, with a focus on the euro area debt crisis scenario and the interest rate shock scenario.

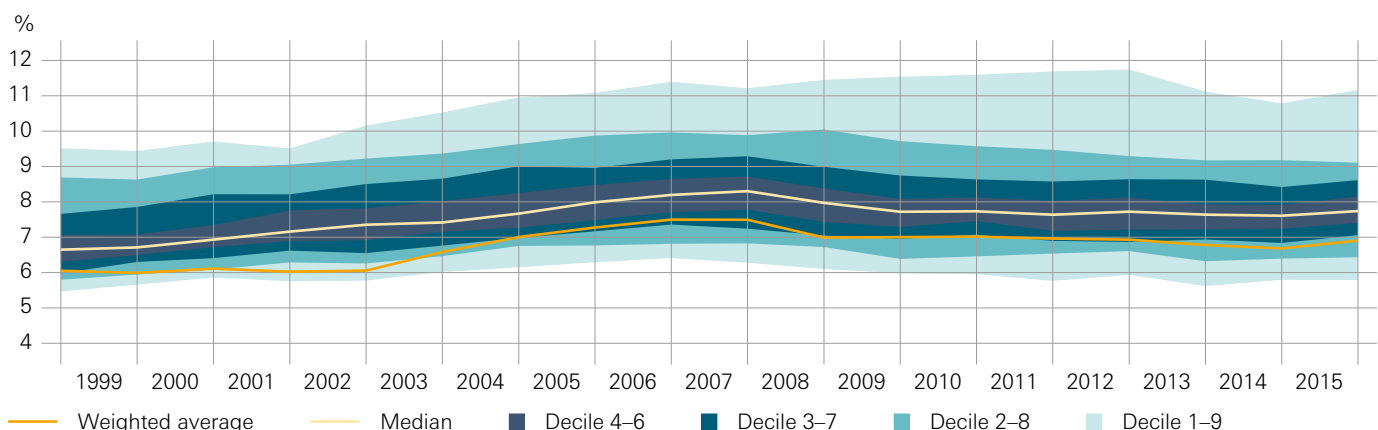
According to SNB stress tests, the euro area debt crisis scenario would result in substantial losses at many domestically focused banks. As a result, for a number of banks covering a significant share of the domestic credit market, the estimated losses would deplete a sizeable proportion of their surplus capital. Owing to the surplus capital currently held by banks, the cumulative share of domestically focused banks that are estimated to fall below the regulatory minimum or the specific capital buffer target levels set by FINMA would nevertheless be negligible.

Under the interest rate shock scenario, around half of the banks would be negatively impacted. Banks with pronounced maturity transformation would be hardest hit. As a result, a small number of banks with a small share of the domestic credit market would fall under the specific capital buffer target levels set by FINMA. Overall, the

TIER 1 LEVERAGE RATIO OF DOMESTICALLY FOCUSED COMMERCIAL BANKS

Distribution of Tier 1 capital to leverage ratio exposures*

Chart 20



* Until 2013, Tier 1 divided by total assets. From 2014 onwards, Tier 1 divided by Basel III leverage ratio exposure.

Sources: FINMA, SNB

capital surplus in the system would not be depleted substantially.

While these results suggest that banks should be able to continue fulfilling their role as credit providers to the real economy under both adverse scenarios considered, they have to be put into perspective. As mentioned before, the impact of shocks on the banking system is highly non-linear. This applies in particular to interest rate shocks (cf. ‘Interest rate risk’, pp. 26–30). As a consequence, in the event of larger shocks than assumed in the stress scenarios, both the share of banks making losses and the share of the capital surplus that would be depleted would increase disproportionately. For example, if domestically focused banks faced shocks of the same magnitude as seen in the stress events of the last real estate crisis in Switzerland in the 1990s, it is likely that most of these banks would suffer substantial losses and that a significant number of banks would fall below the specific capital buffer target levels.

This highlights the importance of banks’ existing capital surpluses relative to the regulatory minimum requirement. The activation of and increase in the CCyB, as well as the designation of systemically important banks, make a significant contribution to maintaining these surpluses.

Banks’ lending and interest rate risk policies warrant special attention

As discussed in chapter 3.2.1, owing to the comparatively weak growth in fundamentals, imbalances on the mortgage and residential real estate markets have increased slightly since the last *Financial Stability Report*, despite a slowing of momentum on these markets. Moreover, affordability risks and interest rate risk exposure from maturity transformation at domestically focused banks have increased from a high level.

Financial stability risks emanating from the Swiss mortgage and residential real estate markets and the low interest rate environment could increase further.

First, with subdued growth in fundamentals, even low momentum on the Swiss mortgage and residential real estate markets could lead to a further increase in imbalances on these markets.

Second, absent a normalisation of interest rates, upward pressure on prices will remain strong on the residential real estate market in the near term, particularly for investment property. Even though yields in this market segment are already very low by historical standards, they are still high compared to alternative investments. In the event of an interest rate increase at a later stage, there is the risk of a substantial correction in prices for residential investment property. Such a price correction would put leveraged investors – as well as banks providing the funding for such investors – under pressure.

Finally, uncertainty exists as to the sustainability of the current interest rate margin situation at domestically focused banks. Should competition between banks or from non-bank market participants increase, interest rate margins would come under downward pressure. A decrease in interest rate margins from the current low level would represent a challenge for banks’ future profitability and capacity to build capital from retained earnings. Furthermore, it would increase the banks’ incentives to counteract these developments by taking on more risks in mortgage lending. The longer the period of exceptionally low interest rates, the stronger the incentives. Such strategies may help to stabilise short-term profitability, but would further increase banks’ exposure to large interest rate shocks and to a correction on the mortgage and real estate markets in the medium term.

The SNB will continue to monitor developments on the mortgage and real estate markets closely, paying particular attention to developments in the residential investment property segment as well as to banks’ risk-taking in mortgage lending. In parallel, the SNB will continue to reassess the need for an adjustment of the CCyB on a regular basis.

Interest rate risk

Summary

Interest rate risk is a major risk for domestically focused commercial banks. Its measurement is complex and subject to considerable uncertainty, particularly in an environment of low or negative interest rates. In this section, we discuss the two approaches used by the SNB to assess the exposure of Swiss banks to interest rate shocks. The first is a static economic value approach (EVA), which measures the comprehensive valuation effect of an immediate and permanent interest rate shock on banks' economic capital. The second is a dynamic earnings approach (EA), which measures the impact of an interest rate scenario on banks' future net interest income over a given time horizon, considering a rich set of dynamic effects. The following conclusions can be drawn from the analysis presented below.

First, in the current environment, EA is better suited to measuring the impact of an upward interest rate shock. EA captures both the restoration of the liability margin that would occur in the event of a rise in interest rates and the extent of banks' maturity transformation in a single coherent framework, which is not the case for EVA.

Second, banks' net interest income would increase, on average, in the event of a small to moderate upward interest rate shock, despite their risk exposure from maturity transformation. This reflects the fact that, driven by a restoration of their liability margin, banks' total interest rate margin would normalise. Starting from the current low level, it is estimated to reach levels last observed around 2010 in the event of a 200 basis point shift of the interest rate curve.

Third, both metrics indicate that banks would be strongly negatively affected by large upward shocks, such as a 400 basis point shift of the interest rate curve. In this case, the materialisation of the risks from their exposure to maturity transformation would be the main factor in the impact on banks. Driven by a sharp decline in their margin from maturity transformation, particularly in the initial years after the interest rate shock, banks' total interest rate margin is estimated to fall significantly below the current level. While an upward shock of 400 basis points is substantial and unlikely to occur over the short to medium term, it should be borne in mind that, up to 2008, periods with interest rate levels of about 300 to 400 basis points higher than now were common in Switzerland. Furthermore, historical experience shows that interest rates can normalise rapidly and unexpectedly, and may significantly overshoot during the normalisation process.

Fourth, the assessment of interest rate risk, using either of the two metrics, depends critically both on the

size of the interest rate shocks and on the relevant behavioural assumptions. The uncertainty attached to these assumptions is generally considerable and is exacerbated in the current exceptional interest rate environment. This applies, in particular, to the repricing of non-maturity deposits and the evolution of liquidity reserves in the event of an interest rate rise. Given this uncertainty and the materiality of interest rate risk for the banking sector, banks should adopt a conservative approach when choosing the underlying assumptions and defining their risk strategy.

Introduction

Interest rates in Switzerland have been exceptionally low for almost a decade. Over the last two years, they have decreased further, moving into negative territory, and are now more than 300 basis points below levels commonly observed up to 2008. Given the current economic (and monetary) environment, a sudden and sharp rise in interest rates is unlikely to happen in the short and medium term. However, historical experience shows that interest rates can normalise rapidly and unexpectedly, and may significantly overshoot during the normalisation process. The analysis of the impact of such adverse shocks on banks is at the core of the financial stability assessment conducted by the SNB.

Domestically focused banks are predominantly active in the interest income business. Indeed, net interest income (NII) – the difference between interest income and expenses – represents around 70% of these banks' earnings used to cover costs and build up capital.

Due to the nature of their business, which typically involves extending medium to long-term fixed interest rate loans and taking deposits with potentially short-term repricing maturities, these banks are traditionally exposed to upward shocks in interest rates. This process of maturity transformation, in which interest rates on assets are locked in for longer than interest rates on liabilities, exposes banks to losses in the event of substantial interest rate rises.

While the risk associated with an interest rate shock (interest rate risk) is a major risk for these banks, it is one they are in a position to manage. They can influence the margin earned on assets and liabilities – as well as, to some extent, their maturity transformation – through pricing policy. Equally, they can hedge residual maturity mismatches using financial instruments.

Measuring banks' exposure to interest rate risk is challenging, mainly due to behavioural uncertainties, which are exacerbated by the current environment. This applies particularly to the repricing of non-maturity deposits and the evolution of banks' sight deposits at the central bank in the event of an interest rate rise. Indeed, the volume of non-maturity deposits has almost doubled during the current low interest rate

period. Banks' sight deposits at the SNB have also grown strongly and currently represent a substantial share of banks' total assets. In addition, the decoupling of most interest rates paid to depositors from market interest rates has rendered the repricing of non-maturity deposits in the event of a sharp rise in interest rates more uncertain.¹

This section first outlines and contrasts the two approaches which the SNB uses to measure the exposure of Swiss banks to interest rate shocks. It then illustrates and explains the main reasons for the key differences between the two metrics in the current interest rate environment. Finally, it discusses key current uncertainties related to the assessment of interest rate risk in the Swiss banking system.

Two complementary measurement approaches: economic value versus earnings

In line with most banks' practices, the SNB measures the direct exposure of banks to adverse movements in interest rates using two complementary approaches. The first approach is EVA, which measures the change in the economic value of a bank's equity (EVE) due to an immediate and permanent shift in the general level of interest rates. In our estimations, a bank's EVE is approximated as the net present value of the net cash (in)flows from current assets, liabilities (excluding own equity) and off-balance-sheet positions discounted by the relevant risk-free interest rate. EVA measures the change in EVE when the interest rates used to discount these cash flows change.

The second approach is EA, which measures the impact of an interest rate scenario on a bank's future NII over a given time horizon. Changes in market interest rates affect a bank's future NII through the

implied changes in the interest paid and earned on a bank's positions.

Both measures aim to capture the exposure of a bank's interest earnings to changes in market interest rates, which will eventually affect the level of the bank's capital. Yet the two measures focus on different dimensions of interest rate risk. In particular, they differ with respect to their consideration of dynamic effects, their comprehensiveness and the channel of impact on capital (cf. table B2).

The first major difference between the two approaches used at the SNB is the consideration of dynamic effects resulting from interest rate shocks, which can alter the risk profile of a bank's balance sheet over time. EA explicitly models changes in commercial margins or in maturity profiles at renewal of maturing positions, customer behaviour leading to shifts between balance sheet categories, and management actions resulting from an interest rate shock.

EVA ignores such dynamic effects as it measures the risk to the net present value of a bank's cash flows from current balance sheet positions. EVA is thus based on the implicit assumption that maturing commercial positions run off the balance sheet and are replaced by positions earning risk-free interest rates.

The second major difference between the two approaches is the time horizon over which they measure interest rate risk. EVA is a comprehensive measure, capturing the risks from repricing maturity mismatches over the entire remaining life of current balance sheet positions. By contrast, EA captures those risks that will impact NII within the time horizon considered in the underlying scenario, typically up to five years. Hence, depending on the maturity structure of a bank's positions, this metric might fail to capture a significant portion of a bank's actual interest rate risk exposure.

Finally, the two approaches differ as to how interest rate risk affects a bank's capital. EA captures the impact of an interest rate shock on a bank's future level of capital through profits and losses realised over time.

¹ This higher uncertainty arises from the fact that recent repricing experience for these positions is unlikely to be a good guide for repricing assumptions in the event of a strong upward interest rate shock. Recently, interest rates on most non-maturity deposits have remained unchanged as market interest rates have descended into negative territory. This low interest rate sensitivity is also likely to apply in the event of a low to moderate upward shock. By contrast, for larger shocks, the interest rate sensitivity might be particularly high. In the event of a sharp rise in interest rates, banks might have to adjust rates on deposits faster than historically observed, to retain a sufficient share of the deposits which have flowed in during the low interest rate period to fund their assets.

INTEREST RATE RISK: COMPARISON BETWEEN EVA AND EA USED AT THE SNB

Table B2

	Static economic value approach (EVA)	Dynamic earnings approach (EA)
Risk components	Repricing maturity gaps	Repricing maturity gaps, margin risks
Interest rate scenario	Immediate and permanent interest rate shock	Dynamic interest rate scenario
Balance sheet	Static	Dynamic
Horizon	Entire horizon until repricing	Short to medium term
Channel of impact on capital	Valuation impact	P&L impact

EVA, meanwhile, captures the immediate valuation effects of an interest rate shock on a bank's capital level as if all balance sheet positions were marked to market (economic capital). However, as most positions on domestically focused banks' balance sheets are booked at nominal value, valuation effects have a minor immediate impact on banks' profit and loss (P&L) and regulatory capital.²

Altogether, EA and EVA provide a complementary – and in some cases contradictory – picture of a bank's exposure to interest rate risk. While EVA measures the comprehensive valuation effect of an immediate and permanent interest rate shock on a bank's economic capital, EA measures the impact of an interest rate scenario on future capital levels through profits and losses, considering a rich set of dynamic effects.

Analysis of main differences between the two metrics in the current environment

We illustrate the assessment provided by the two approaches in the current environment by comparing the estimated impact of upward interest rate shocks on domestically focused banks' aggregate EVE and NII. For the sake of exposition, we consider two hypothetical upward shocks of 200 and 400 basis points from the current interest rate level. When interpreting the results, it is important to note that the impact on individual banks may deviate from the aggregate impact in both size and direction, due to differences in the structure of individual banks' balance sheets and hedging positions.

² This applies in the normal course of business. However, valuation effects could become more relevant in the event of liquidation.

Different treatment of the impact of an interest rate shock on banks' liability margins

The 200 and 400 basis points interest rate shocks both lead to a decline in banks' net present value under the static EVA, reflecting the positive maturity gap in banks' current portfolios. A 400 basis point shock would result in a reduction in EVE of approximately 28% (cf. chart B3).

EA delivers contrasting results to EVA for the smaller shock and directionally similar outcomes for the larger shock (cf. chart B4). While a shift in the current interest rate curve of 200 basis points would increase banks' NII, a shift of 400 basis points would result in a decrease of cumulative NII of around 10% over a five-year horizon. The impact of an interest rate shock on banks' NII depends on the size and direction of its effect on the three components of banks' interest rate margin: the asset margin, the liability margin and the structural margin (margin from maturity transformation).

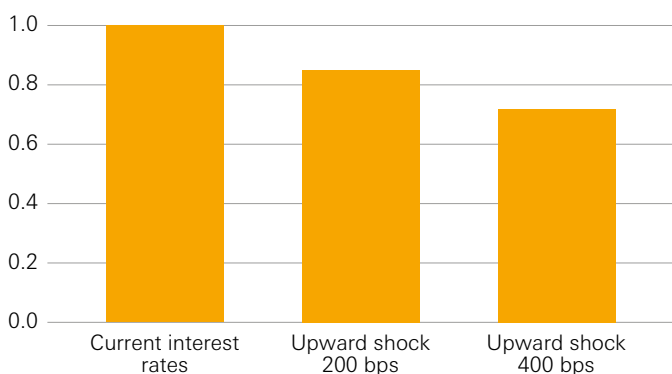
First, an upward interest rate shock would lead to a decline in the structural margin, reflecting the positive maturity gap in banks' current portfolio. For both EA and EVA, the impact increases with the magnitude of the interest rate shock, as the gap between locked-in interest rates on assets and interest rates on repriced liabilities grows.

Second, an upward interest rate shock would have a significant positive effect on the liability margin. This margin is currently negative, as most deposit rates have not followed market interest rates into negative territory. Therefore, it is likely that deposit interest rates will increase by less, or more slowly, than market interest rates in the event of a low to moderate interest rate shock, such as the 200 basis point shift. This would help banks to restore their liability margins and bring them back to positive values. The effect would not increase

ECONOMIC VALUE OF EQUITY OF DOMESTICALLY FOCUSED COMMERCIAL BANKS

Net present value in different scenarios relative to Tier 1 capital, scaled

Chart B3

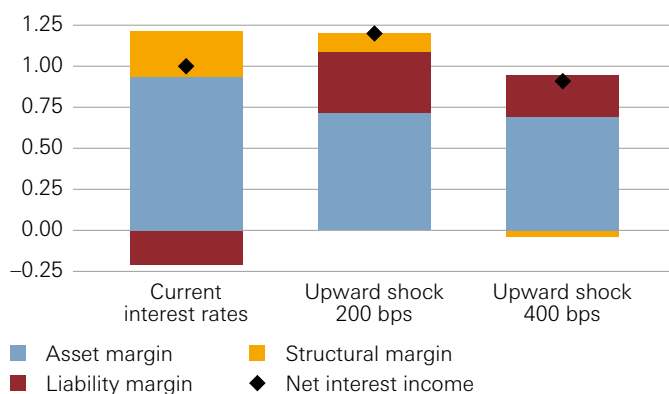


Source: SNB

NET INTEREST INCOME OF DOMESTICALLY FOCUSED COMMERCIAL BANKS

Simulated values over 5-year horizon in different scenarios, scaled by net interest income at current interest rates

Chart B4



Source: SNB

further for larger shocks, once liability margins have been restored.³

Third, the asset margin would decrease in the event of a rise in interest rates. This is because margins on mortgages and loans have widened since the introduction of negative interest rates and are assumed to contract to their previous level when interest rates return to positive territory.

Overall, in the event of a low to moderate upward interest rate shock, the positive impact on NII due to a restoration of the liability margin would only be partially offset by the reductions in the asset and structural margins, resulting in an increase in NII. Following a 200 basis point interest rate shift, banks' interest rate margin would increase by around 20 basis points and reach levels last observed around 2010 (cf. chart 16 in chapter 3). However, for larger shocks, the further reduction in the structural margin would outweigh the impact of the restored liability margin and lead to a decrease in NII. Driven by the sharp decline in their structural margin, particularly in the first years after the shock, in the event of a 400 basis point shock banks' interest rate margin would fall by close to 20 basis points from the current low level.

In contrast to EA, EVA does not take into account the benefits from a restoration of the liability margin to a positive level. EVA will therefore tend to overestimate banks' exposure to an upward interest rate shock in the current situation. Given the size of positions with currently negative margin, this effect is significant, at least for low to moderate interest rate shocks.

³ In fact, for larger shocks, the liability margin would even increase by a smaller amount than in the case of a 200 basis point shock. This is because of a greater assumed migration of sight and savings deposits to fixed-term positions with smaller margins.

Different treatment of liquidity-driven variations in banks' balance sheets

A further difference between the two measures in the current environment arises from the changes in banks' balance sheet size and composition which are likely to accompany an upward interest rate shock.

Over the last few years, domestically focused banks' liquidity reserves at the central bank (sight deposits at the SNB) have increased strongly, from around CHF 1 billion in 2006 to around CHF 140 billion or 14% of banks' total assets at end-2015 (cf. chart B5). At the same time, the yields on banks' liquidity have decreased to nearly zero.⁴

In the event of a rise in interest rates, both the yields on and the size of these positions are likely to be affected. First, banks would earn higher yields from liquidity currently held as reserves on sight deposits at the central bank – either directly if central bank reserves are remunerated, or indirectly through investment in alternative assets.⁵ To the extent that these yields increase more rapidly than interest rates on customer deposits funding these positions, banks' NII and banks' EVE would benefit from such developments, thereby reducing the overall negative impact of an interest rate shock on banks. Both metrics capture this effect.⁶

⁴ Banks' liquidity comprises liquidity held as reserves on sight deposits at the central bank and other liquid assets.

⁵ Cf. Berentsen, Kraenzlin and Müller (2015), 'Exit Strategies and Trade Dynamics in Repo Markets', SNB Working Papers 9/2015, for an exposition of potential instruments that allow central banks to control interest rates in a structural liquidity surplus.

⁶ Strictly speaking, EVA only partly takes into account the difference between the increases in yields on liquidity reserves and interest rates on customer deposits, as the margins are only included until repricing. By contrast, the EA accounts for the increase in margins over the entire scenario horizon.

DOMESTICALLY FOCUSED COMMERCIAL BANKS' SIGHT DEPOSITS AT THE SNB

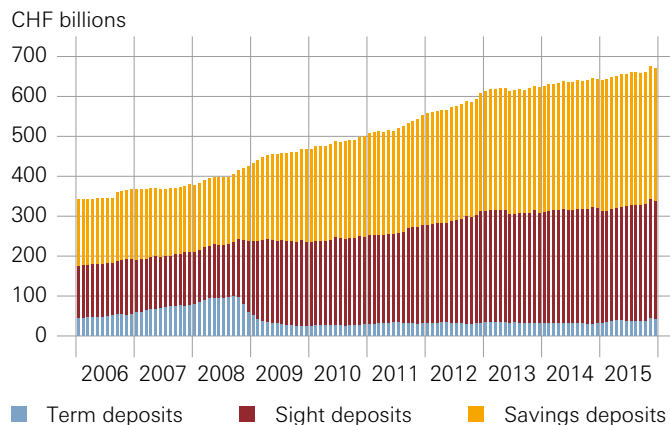
Chart B5



Source: SNB

LIABILITIES TOWARD CUSTOMERS AT DOMESTICALLY FOCUSED COMMERCIAL BANKS

Chart B6



Source: SNB

Second, banks' liquidity holdings – and consequently banks' balance sheets – could decrease. This would occur if, for instance, monetary conditions were normalised through the issuance of securities by the central bank (e.g. SNB Bills).⁷ Under the assumption that these securities were held not only by banks, but also by other investors, banks' balance sheets would shrink as these investors withdrew their bank deposits to buy the securities issued by the central bank.⁸

The larger the share of these securities held by non-banks, the smaller the banks' NII from these positions. While EA explicitly takes this effect into account, EVA does not. Due to its static nature, EVA implicitly relies on the assumption that the size of banks' balance sheets remains unchanged. Hence, it overestimates the volume of liquidity reserves on which banks would earn higher yields in the event of an upward interest rate shock. As a consequence, EVA tends to underestimate the banks' actual exposure to an upward interest rate shock related to the current large liquidity reserves in the banking sector. For a low to moderate upward interest rate shock, this effect is likely to be dominated by the benefits from the restoration of the liability margin discussed above.

Main behavioural uncertainties in the current environment

Two major sources of uncertainty in the quantification of interest rate risk and the corresponding metrics should be highlighted in the current environment.

First, there is uncertainty attached to the behavioural responses of banks and customers to an interest rate shock, such as the speed and extent of adjustment in interest rates on non-maturity deposits and/or the migration of deposits to other products or banks. This concerns both NII and EVE.

Around half of the current balances on non-maturity deposits flowed in during the low interest rate period (cf. chart B6). If interest rates were to increase, these deposits could either migrate to fixed-term deposits with typically higher interest rates or, as described above, flow out rapidly as interest rates on alternative investments rise. This would increase the pressure on banks to adjust interest rates on deposits. The extent and speed of such adjustments is not known ex ante, however. Moreover, recent repricing experience for these positions is unlikely to be a good guide for repricing assumptions in the event of an upward interest rate shock starting from current monetary conditions.

7 The issuance of securities is a common instrument used by central banks to absorb surplus liquidity. Other ways would include liquidity-absorbing repo or FX swap transactions, interest bearing deposits offered by the central bank or the sale of assets.

8 Cf. Berentsen, Kraenzlin and Müller (2015), 'Exit Strategies and Trade Dynamics in Repo Markets', SNB Working Papers 9/2015, and references therein, which indicate that non-banks purchased significant amounts of the SNB Bills issued in 2010 and 2011 in order to absorb excess reserves.

The relevance of assumptions with regard to the repricing maturity of these positions in the case of EVA can be seen in chart 18. This chart shows that the interest rate risk calculated using banks' own assumptions – the blue curve – is significantly lower than the level of interest rate risk calculated on the basis of fixed replications, i.e. using assumptions that are fixed over time and are the same for all banks – the red curve. This is due to the fact that banks on average apply a repricing maturity exceeding the fixed replication assumptions for non-maturity deposits.⁹

These assumptions also have a material impact for EA. A stronger increase in interest rates on sight and savings deposits and/or a stronger migration of these positions to fixed-term deposits with a smaller margin would result in a smaller liability margin. This would significantly reduce the positive impact of a 200 basis point shock on NII and increase the negative impact of a 400 basis point shock.

Second, another important and closely related uncertainty arises from the impact which the withdrawal of surplus liquidity by central banks could have on banks' balance sheet in the event of an upward interest rate shock. As highlighted above, the issuance of securities by the central bank to withdraw surplus liquidity could lead to a shrinkage of banks' balance sheets as a result of bank depositors buying the securities. This in turn would have a negative impact on banks' NII.

Assuming a positive spread between the interest rate earned on these positions and the interest rate paid on the funding deposits generates a significant contribution to NII of domestically focused banks. The larger the share of central bank securities eventually held by non-banks, the smaller the additional NII accruing to banks through this channel would be in the event of an upward interest rate shock.

However, this share, and hence the extent to which banks' balance sheets would contract, as well as the amount of additional NII finally earned by banks, are uncertain. Ultimately, this share depends largely on the behaviour of depositors and the deposit rate policy of banks.

9 The widening of the gap between the blue and red curves in chart 18 has two causes. First, banks have seen strong volume growth in liabilities for which banks apply a repricing maturity exceeding the fixed replication assumptions. Second, many banks have adjusted their assumptions over the last few years, assuming a longer repricing maturity.

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**Data and data sources**

The banking statistics used in this report are based on official data submitted and/or on data reported by individual banks. The analysis covers big banks and domestically focused commercial banks. The latter comprise banks with a share of domestic loans to total assets exceeding 50% or with a prominent role in the domestic deposit market. Data on the big banks are analysed on a consolidated basis. This document is based on data as at 31 May 2016.

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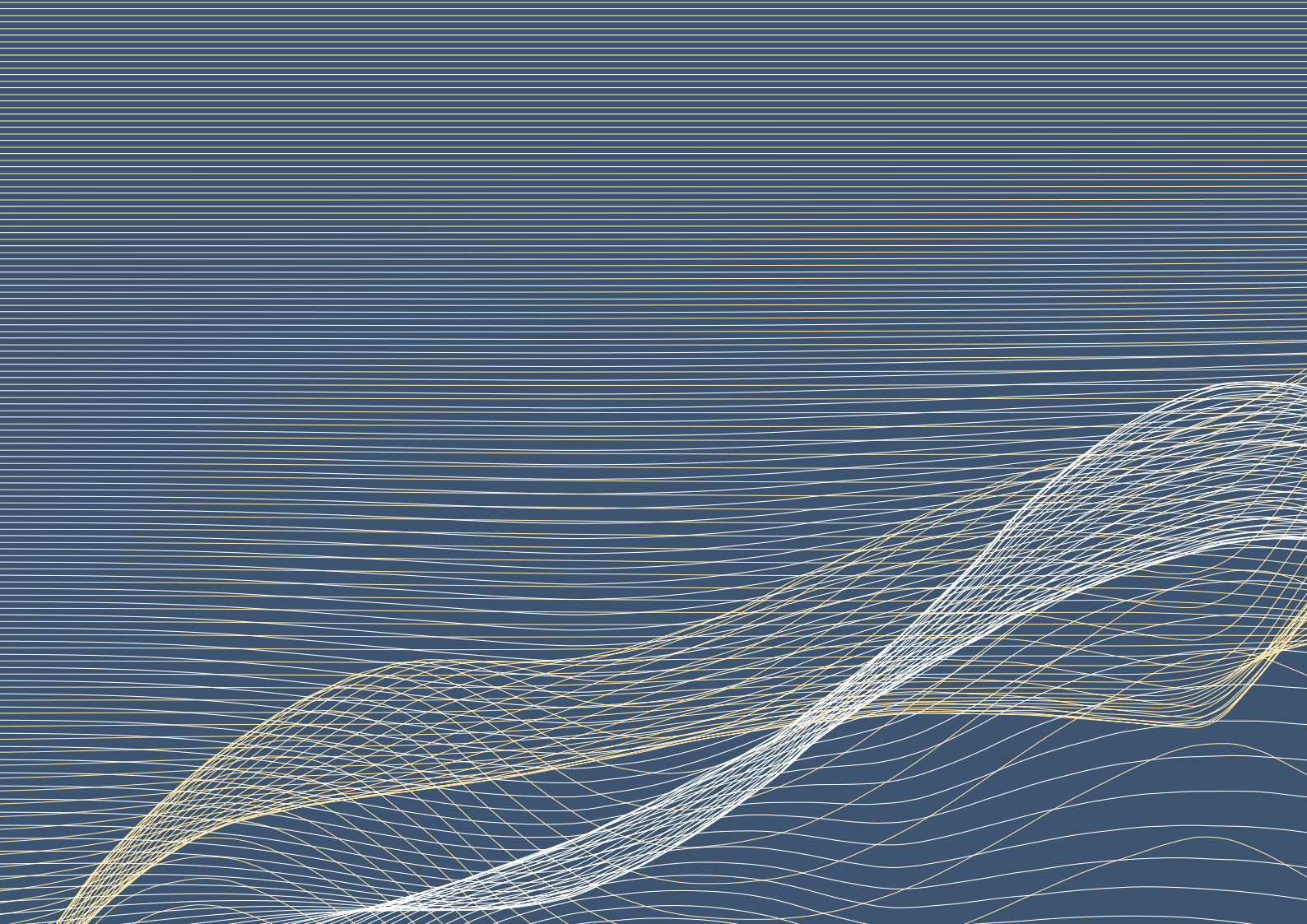
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