

# Report on the Stability of the Financial System

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## 1 Introduction

Central banks have a legitimate interest in the stability of the financial system. A stable financial system plays a vital role in ensuring the smooth functioning of a market economy and the implementation of monetary policy. In return, a monetary policy that ensures price stability while taking into account the development of economic activity, helps create the conditions required for a stable financial system. Central banks also contribute to this stability as operators or overseer of the payments system. Finally, during periods of turmoil, central banks can help maintain or even restore stability by injecting liquidity into the market.

This report looks at the main trends in the Swiss financial sector with a view to their impact on stability. The aim is to give the public an insight into the state of the financial system. The report thus provides an evaluation of the stability of the system and contains a synthesis of information and indicators. Besides, it enables the Swiss National Bank (SNB) to draw attention to tensions or imbalances that could jeopardise the stability of the system.

A stable financial system can be defined as a system where the various components fulfil their functions and are able to withstand the shocks they are exposed to. This report focuses on two vital elements in the system, the *banking sector* and the *financial market infrastructure*.

The banking sector stood up well to the deterioration in economic and stock market conditions in Switzerland and elsewhere in 2002. Most banks have reported positive results and have been able to maintain their capacity to withstand shocks. Those banks that suffered severe losses have often taken action to strengthen their capital base. Moreover, no major imbalances have been identified that could trigger a crisis. As a consequence, the banking system can be considered stable. Nevertheless, attention should be drawn to two potential sources of tension:

Firstly, if the economy remains sluggish, the quality of borrowers is likely to deteriorate, which could raise provisioning requirements at Swiss banks. The banks' relatively prudent lending policy in recent years should, however, enable them to avoid a massive rise in such provisions. Besides, the relaxation of the SNB's monetary policy should help restrict the extent and duration of the economic slowdown in

Switzerland. Secondly, if the adverse stock market situation continues or worsens, the banks will have little scope to raise earnings. However, efficiency enhancement should enable them to lessen the impact on earnings of stagnating trading and asset management income.

In the area of clearing and settlement of payments, securities and other financial instruments the Swiss financial system can rely on the payment system Swiss Interbank Clearing (SIC) and the securities settlement system SECOM, two well-established systems whose architecture minimises settlement risks. The introduction of the multi-currency payment system Continuous Linked Settlement (CLS) in September 2002 and the central counterparty SIS x-clear in May 2003 has reduced the risks involved in the settlement of foreign exchange and securities transactions. Moreover, various organisational and technical measures are planned or have already been implemented to raise the operational reliability of these systems. Overall, Switzerland has a well-functioning financial infrastructure and safety and efficiency are very high by international standards.

<sup>1</sup> Document based on the data available as at May 15, 2003.

## 2 The Banking Sector

### 2.1 Overview

The analysis of the stability of the banking sector is based on three elements. Firstly, the development of systemic risk factors such as economic and stock market conditions is described. Secondly, the banking sector's exposure to these risk factors is evaluated. Finally, the banking sector's resilience to these shocks in terms of capitalisation is measured.

This analysis shows that the Swiss banking sector faced unfavourable conditions in 2002. Following a prolonged stock market boom, share prices plunged for the second consecutive year. Moreover, the Swiss economy stagnated and global economic growth was low. The profit downturn in the Swiss banking sector, which started in 2001, therefore continued in 2002.

Overall, the Swiss banking sector was nevertheless profitable in 2002. Furthermore, it has essentially managed to preserve the equity base required to absorb shocks, mainly as a result of capital increases by most of the banks that have sustained losses. At the end of 2002, the capitalisation of the banking sector was still high, both historically and by international standards.

The relative robustness of the results published by the banking sector reflects the dominance of lending as a source of revenue. The downturn on the stock markets caused a sharp drop in revenues from operations such as asset management and investment banking. Moreover, some banks reported losses – sometimes substantial ones – on their own investment portfolios. By contrast, the results from lending business remained relatively good despite the economic slowdown. The quality of the Swiss banks' loan portfolios has not deteriorated visibly in spite of the cyclical rise in credit risk.

The current rise in credit risks throughout the economy represents the principal short to medium-term risk to the banking sector. Experience suggests that there is normally a time lag between an economic slowdown and a rise in bank provisions for credit risks. After two years of low economic growth, a sharp rise in provisioning requirements cannot be ruled out in 2003. This would put pressure on the performance of bank lending operations. In addition the stock market environment remains unfavourable, the banks will only have a limited scope for raising revenue from trading and asset management activities.

However, the related risks need to be put into context. Firstly, the only moderate growth in bank loans in recent years suggests that the banks pursued a relatively prudent lending policy during the stock market boom. Secondly, the moderate rise in real estate prices indicates the absence of a speculative bubble – and the attendant risks – in this sector. Thirdly, the banks have taken action to restore profitability, especially in the trading and asset management segments.

## 2.2 General operating conditions

Both financial market conditions and the general operating environment for the banking sector deteriorated in 2002. For the first time since the mid-seventies, a downturn on the stock markets, accompanied by high volatility, coincided with a period of economic stagnation. The downtrend on the stock market, which started in mid-2000, continued in 2002 and volatility increased strongly, reaching a relatively high level by the end of 2002. This was accompanied by a rise in yield spreads on the bond market and an increase in the number of bankruptcies. In view of the weakness of the economy, this indicates a general reduction in the credit standing of borrowers.

### Equity market downtrend accompanied by high volatility<sup>2</sup>

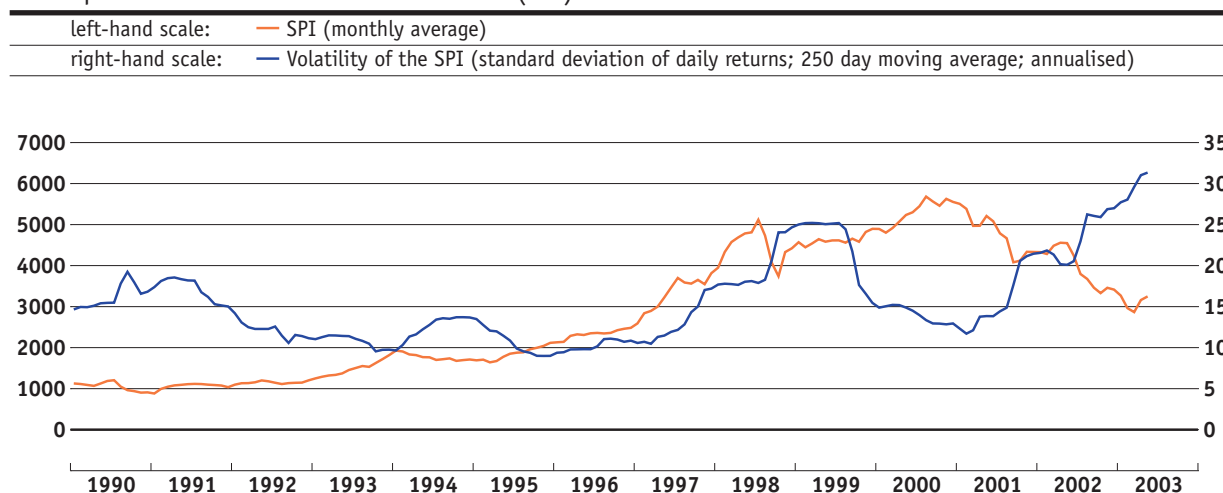
The Swiss Performance Index (SPI) dropped 26% in 2002. By the end of December it had fallen to the mid-1997 level of 3246 (see Chart 1). The equity markets in the USA, Europe and Japan suffered equally sharp declines: at year-end 2002 the S&P 500 share index was down 23% year-on-year, while the DJ STOXX 50 lost 35% over the year and the Nikkei 225 dropped 19%. Moreover, at the start of 2002, the volatility of the SPI (see Chart 1) and the S&P 500 was well above the average for the previous 14 years and volatility increased significantly again during the year. Looking back over the past 20 years, the extent and duration of both phenomena – the persistent bear market and high volatility – are exceptional.

### Economic weakness<sup>3</sup>

The main industrialised countries and Swiss trading partners were affected by an economic downturn in 2002. In the European Monetary Union, real GDP grew by 0.9%. Growth picked up slightly in the United States but was nonetheless only 2.4%, well below the average of 3.2% in the previous ten years. In view of this, the Swiss economy stagnated in 2002, having grown by 0.9% in 2001 (see Chart 2). The situation improved slightly from the second quarter. The growth momentum registered at the end of 2002 was roughly in line with the average annual economic growth rate for 1980–2000. The leading economic indicators point to a slight drop in growth in the first quarter of 2003 but suggest that it should pick up again in the second half of the year.

Development of the Swiss Performance Index (SPI)

Chart 1



<sup>2</sup> Sources: SNB, Thomson Financial Datastream and Freeman & Co.

<sup>3</sup> Sources: SNB, Swiss Institute for Business Cycle Research of the Federal Institute of Technology Zurich (KOF), European Commission and OECD.

Chart 1: Sources: SNB; Thomson Financial Datastream.

### Deterioration in the credit standing of borrowers<sup>4</sup>

There was a substantial global decline in the average credit standing of borrowers in 2002 compared with the year before. This was mainly reflected in a rise in the number of bankruptcies and the yield spreads on corporate bonds, which are mostly issued by major corporations.

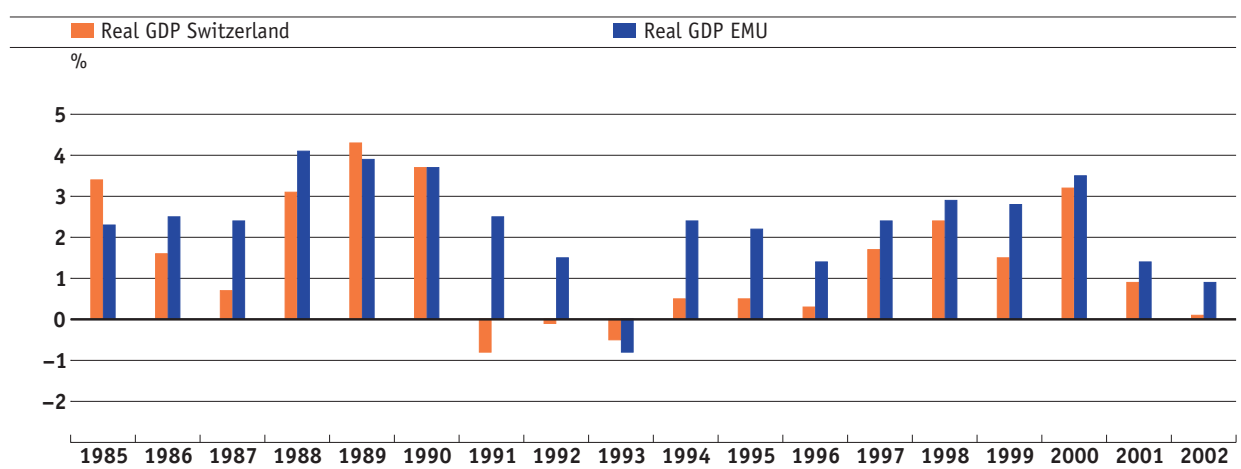
In the Swiss corporate sector, there was an 11% rise in bankruptcies in 2002 compared with 2001 (see Chart 3). Although the number of bankruptcies is still below the average for the last nine years, the latest trend points to a deterioration in the position of small and medium-sized enterprises. Moreover, in the fourth quarter of 2002 the yield spread between cor-

porate and government bonds increased compared to the corresponding year-back figure by 19 basis points<sup>5</sup> in Europe, 24 bp in Switzerland and 39 bp in the USA (see Chart 4). Another sign of the deterioration in the credit standing of borrowers is the volume of bonds affected by bankruptcies, which is calculated by Moody's. In 2002 this indicator rose 53% worldwide.

Since the start of 2003, the yield spreads between corporate and sovereign bonds have declined slightly in the USA as well as in Europe and in Switzerland. This development may be interpreted as a first sign of a medium-term improvement in the credit standing of either domestic or foreign borrowers.

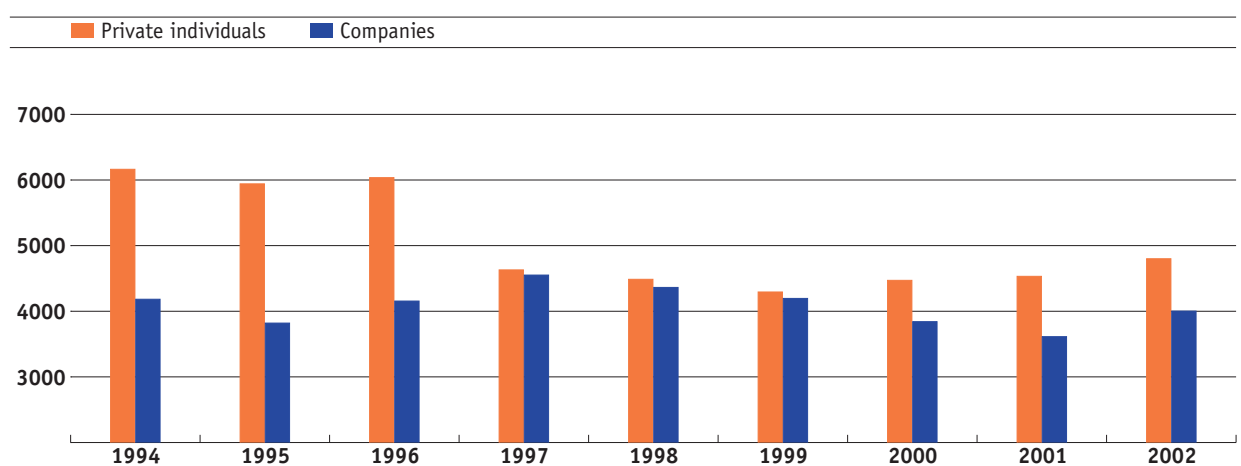
Growth in GDP

Chart 2



Number of bankruptcies in Switzerland

Chart 3



4 Sources: SNB, Creditreform, Lehman Brothers, Moody's and Thomson Financial Datastream.

Chart 2: Sources: SNB; EU Commission.

5 One basis point (bp) corresponds to one hundredth of a percentage point.

Chart 3: Source: Creditreform.

## 2.3 Profitability

The Swiss banking sector was profitable overall in 2002. However, profits were far lower than in 2001. Moreover, there were major differences in level of profits and profit trends within the sector. Banks whose business is heavily dependent on stock market trends did far worse than those that focus on lending. Should the economic stagnation last, the need for risk provisioning will rise, leading to lower profitability at banks that specialise in lending.

### Deterioration in profitability<sup>6</sup>

The Swiss banking sector generated a profit of CHF 9.3 billion in 2002, giving a return on assets<sup>7</sup> of 0.41%, a drop of 21% compared with 2001. There was an increase in the number and average size of banks reporting a loss. In 2002, 52 banks, accounting for 13% of total assets in the banking sector (32% on a consolidated basis<sup>8</sup>) made a loss, compared with 39 in 2001 (2.7% of total assets or 2.1% on a consolidated basis – see Chart 5). Although the year-on-year deterioration in the situation was substantial, profits reported in 2002 were close to the average level of profits in the banking sector in the previous decade (average 1990–2002: 0.47%; see Chart 6).

Interest rate spread Chart 4

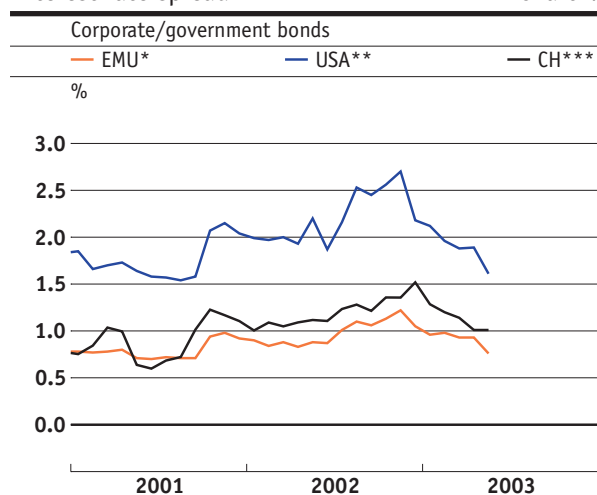


Chart 4:  
Sources: SNB; Thomson Financial  
Datastream.

\* Euro Aggregate Corporate  
and Euro Aggregate  
Government indices,  
Lehman Brothers

\*\* US Aggregate Corporate  
Investment Grade and  
US Aggregate Government  
indices, Lehman Brothers  
\*\*\* Yields (spot rates) for corpo-  
rate bonds with a rating of  
at least BBB- and on Con-  
federation Bonds, calculated  
by SNB

6 Sources: SNB, Federal Bank-  
ing Commission (FBC), OECD and  
annual reports.

7 Net profit as a percentage  
of total assets stated on the bal-  
ance sheet.

8 In the charts and, unless  
otherwise stated, in the text,  
the figures are calculated at the  
company level (i. e. on a non-  
consolidated basis). Where

banks have majority stakes in  
other companies and/or are part  
of a holding structure, figures  
at the company level may differ  
from the consolidated data.  
For the big banks, where the dis-  
crepancy may be substantial  
and statistics where consolidated  
data are available, the consoli-  
dated figures are given in addi-  
tion to the company level data.

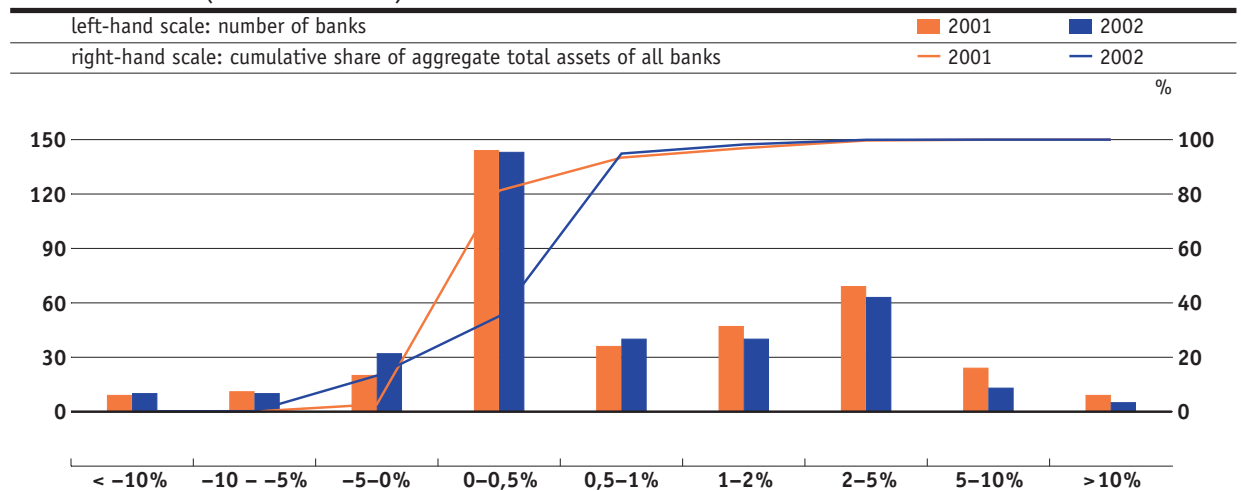
The drop in profits affected most categories of banks<sup>9</sup>. However, the extent of the decline varied significantly from one category to another. Measured by the return on assets, the decline was particularly marked at the big banks (on a consolidated basis: -30 bp to 0.01%; at the company level: -2 bp to 0.44%), the cantonal banks (-26 bp to -0.11%), trading and stock exchange banks (-79 bp to 0.64%) and private banks (-143 bp to 1.07%). Conversely, the regional banks (-8 bp to 0.37%) and the Raiffeisen banks (+6 bp to 0.46%) did not register any major change in profitability.

The downtrend on the stock markets and the drop in investment banking operations (mergers, acquisitions and stock market listings) were the main

factors behind the systematic reduction in the profitability of the banking sector. Because of their strong focus on the financial markets, the big banks, trading and stock exchange banks and private banks have been worst affected by this trend. The decline in stock market prices and investment banking operations resulted in a reduction in commission and trading income (-11% to CHF 30.3 billion) but also in mounting losses on financial assets (at the company level: +46% to CHF 6.2 billion; on a consolidated basis: +18% to CHF 9.1 billion).<sup>10</sup> This drop in revenues and financial assets values was not fully offset by the reduction in operating expenses (-6% to CHF 34.8 billion).

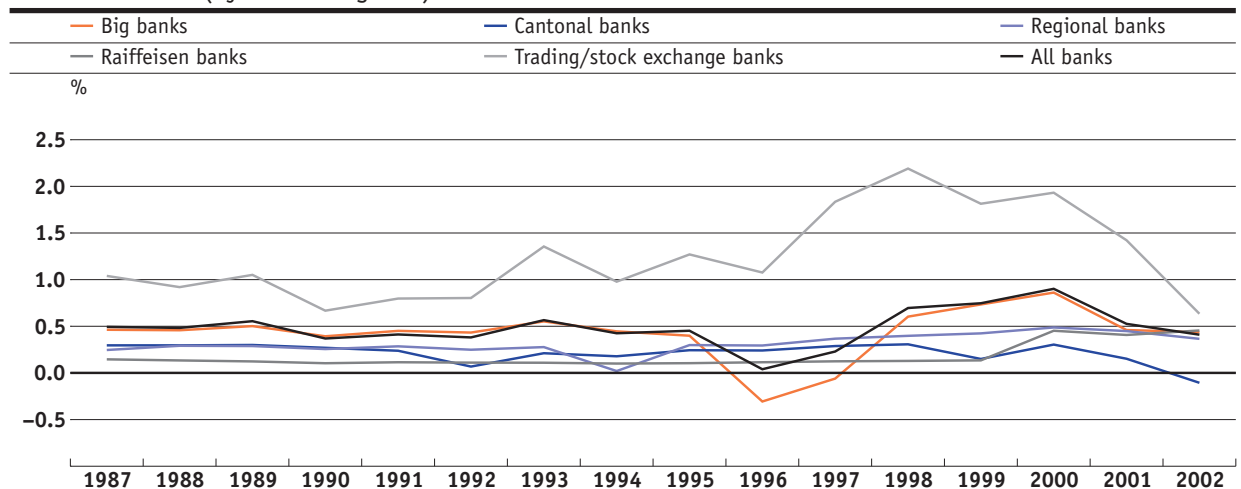
Return on assets (individual banks)

Chart 5



Return on assets (by bank categories)

Chart 6



9 Cf. Box 1 for a description of the structure of the banking sector and the different types of banks.

Chart 5: Sources: SNB; FBC.  
Example to assist interpretation of Chart 5: In 2001 approx. 140 banks generated a return on assets of between 0% and 0.5% (red bars). The banks with a return on assets of less than 0.5% together accounted for 80% of the aggregate total assets of all banks in 2001 (red line).

Chart 6:  
Sources: SNB; FBC.

10 Financial assets comprise, primarily, shares in companies owned by the bank. Cf. the accounting standards (Sections 23-27 of the Swiss Code of Obligations) issued by the FBC.

The development of revenues from lending operations contrasts with the trend in commission and trading income. There was little change in income from lending operations (-2.2% to CHF 22.3 billion) and the related risk provisioning requirements (+5.8% to CHF 7.3 billion)<sup>11</sup>. That explains the relative robustness of profits at the regional banks, Raiffeisen banks and most cantonal banks, where lending accounts for the bulk of revenues (71%).

At the same time, there is a very wide range of profit trends within each category of bank. The aggregate figures for the big banks and cantonal banks reflect the impact of losses at one bank in each category, such as CS Group in the category of big banks and Banque Cantonale Vaudoise (BCV) in the category of cantonal banks, respectively. The extent of the loss at CS Group reflects its high exposure to the stock market through its insurance arm (Winterthur) and investment bank (CSFB). At BCV, the losses result chiefly from the use of unsuitable provisioning methods and accumulated credit risks during the nineties, whereas the recent deterioration in economic and stock market conditions played only a minor role.

#### **Outlook<sup>12</sup>**

At present there are few signs of an upturn on the financial markets. Consequently, commission and trading income is likely to remain low in 2003. Moreover, tougher competition is expected, especially in the investment banking sector, and that will put additional pressure on margins. Furthermore, the earnings outlook for lending business has deteriorated owing to the sluggish economy.

Consequently, if the economic situation does not improve, the decline in profitability in the Swiss banking sector is likely to continue in the medium term. Moreover, the types of banks that have not yet been affected by the economic and stock market downturn could report lower profits in 2003. Efforts to reduce costs should, however, help reduce the impact on profits. Many banks took steps to raise efficiency through alliances or mergers in 2002 (see Box 2) or through in-house measures, especially at the big banks. This is part of an ongoing process which reduced the number of banks from 625 to 356 between 1990 and 2002, accompanied by a reduction in the number of branches from 5,444 to 3,673 and in the number of employees in the Swiss banking sector from 120,000 to 104,500.

11 Cf. Section 2.4 (risks).

12 Sources: SNB and FBC.



## 2.4 Risks

The SNB disposes of indicators for three types of risk: credit risk, interest-rate risk and market risk. In terms of the proportion of non-performing loans and the level of write-downs and provisions, there was a further decline in the credit risk of Swiss banks compared with 2001, bringing this indicator to a low level. Interest-rate risk remains low and market risk declined slightly in 2002 compared with 2001. In short, the risk factors in the banking sector therefore declined slightly last year. However, credit risk is expected to rise this year as a result of the poor economic conditions.

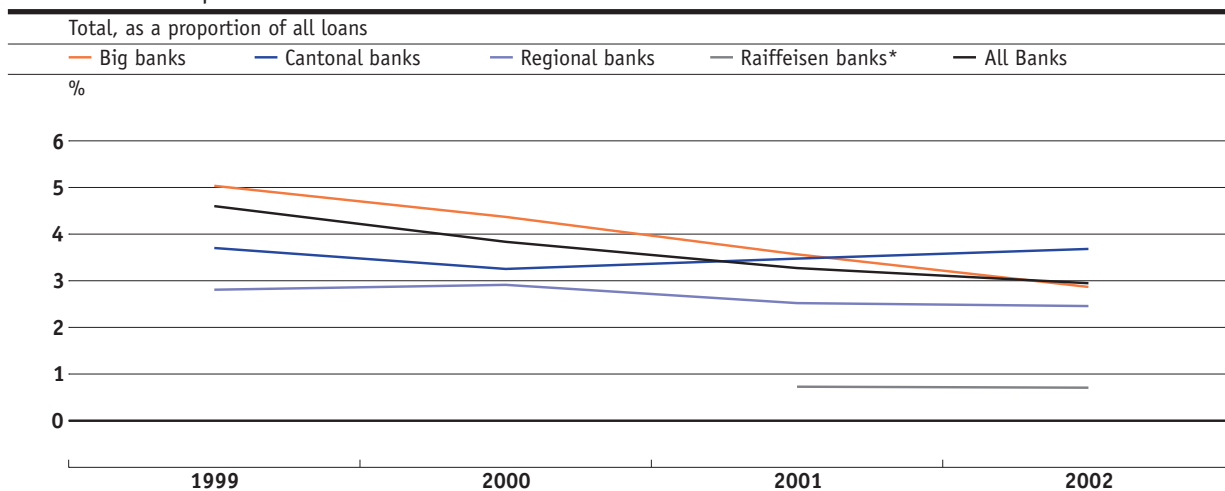
### Lower credit risk despite sluggish economy<sup>13</sup>

Credit risk measures the risk of default by a counterparty, in other words, the risk that a counterparty will fail to make the agreed interest and repayment instalments in full. Write-downs and provisions by banks can be taken as an indicator of this because they reflect both the average quality of the present loan portfolio (credit standing) and anticipated future changes in the creditworthiness of borrowers.

Write-downs and provisions for default risks, as a percentage of total lending, declined from 3.3% at year-end 2001 to 2.9% at year-end 2002. At the same time, non-performing loans<sup>14</sup>, as a percentage of total lending, declined from 3.6% to 3.1%. This indicates that overall the average quality of the loan portfolio improved slightly between year-end 2001 and year-end 2002. Write-downs and provisions for default risks and non-performing loans vary between approximately 1% and 4% of total lending depending on the type of bank (see Charts 7 and 8). The differences are primarily due to differences in the composition of their loan portfolios. For example, mortgages account for 90% of total lending<sup>15</sup> at regional and Raiffeisen banks, 80% of total lending at cantonal banks and only slightly over 40% at the big banks. At all types of bank, the majority of mortgages, i.e. about 90%, are first rank mortgages.<sup>16</sup> Since the loan to value ratios are low, these types of mortgage are very low-risk. The attendant write-downs and provisions are therefore comparatively low. Moreover, more than half of customer claims at regional and Raiffeisen banks are secured by collateral. By contrast, at cantonal banks and the big banks, about 40% of loans are secured by collateral, resulting in higher write-downs and provisions even if the quality of the loan book is identical.

Write-downs and provisions for default risks

Chart 7



13 Sources: SNB, FBC, Wüest & Partner.

14 Non-performing loans are customer claims and mortgage loans where interest payments are at risk or are no longer expected to be made.

15 Mortgages plus customer claims.

16 First rank mortgages are granted for a maximum of  $\frac{2}{3}$  of the market value of the property in the case of residential property or  $\frac{1}{2}$  of the market value in the case of building land and commercial premises. For major commercial properties and industrial premises the limit is just  $\frac{1}{3}$  of the market value.

Chart 7: Sources: SNB; FBC.  
\* Statistics for the Raiffeisen banks only available from 2001.

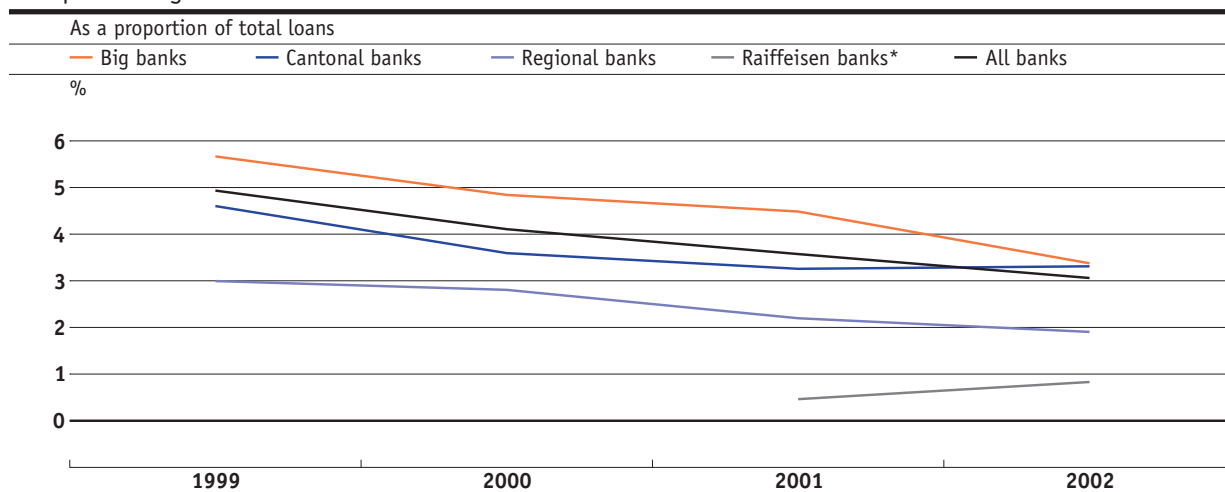
In 2002 there was only a slight year-on-year change in *new* write-downs and provisions as a proportion of total lending volume. The aggregate write-down for the entire sector was 0.76% (2001: 0.72%). The new write-down and risk provisioning requirements were thus below the average for the previous ten years (1.15%). Looking at the split by types of bank, new write-downs and provisions were 0.74% of total lending at the cantonal banks, 0.89% at the big banks, 0.36% at regional banks and 0.09% at the Raiffeisen banks.

The soundness of the lending operations at Swiss banks is probably due to efforts in recent years to raise the quality of loan books. By streamlining

lending portfolios and improving the quality of loans (e.g. by demanding higher collateral and implementation of plans of action) the Swiss banks have managed to reduce the proportion of bad loans. However, a continued economic downswing in 2003 would probably raise credit risk again, firstly because it could reduce the credit standing of borrowers who currently have a good credit profile and secondly, because experience indicates a certain time lag before the credit quality indicators analysed here respond to changes in economic conditions (see Chart 9). Consequently, it should be assumed that the decline in economic growth in 2002 will continue to have an impact this year.

### Non-performing loans

Chart 8



### GDP and new write-downs

Chart 9

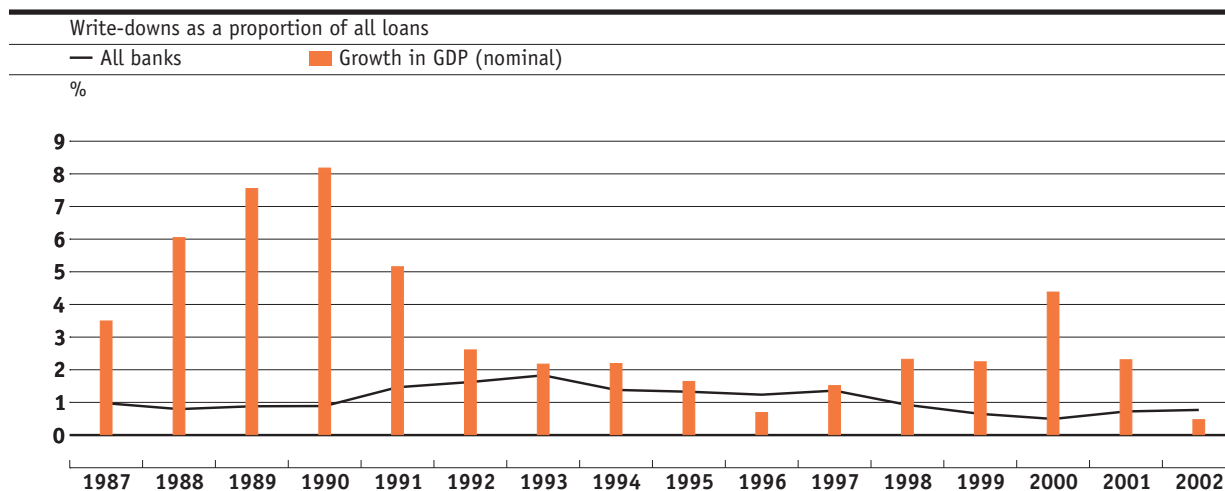


Chart 8: Sources: SNB; FBC.  
\* Statistics for the Raiffeisen banks only available from 2001.

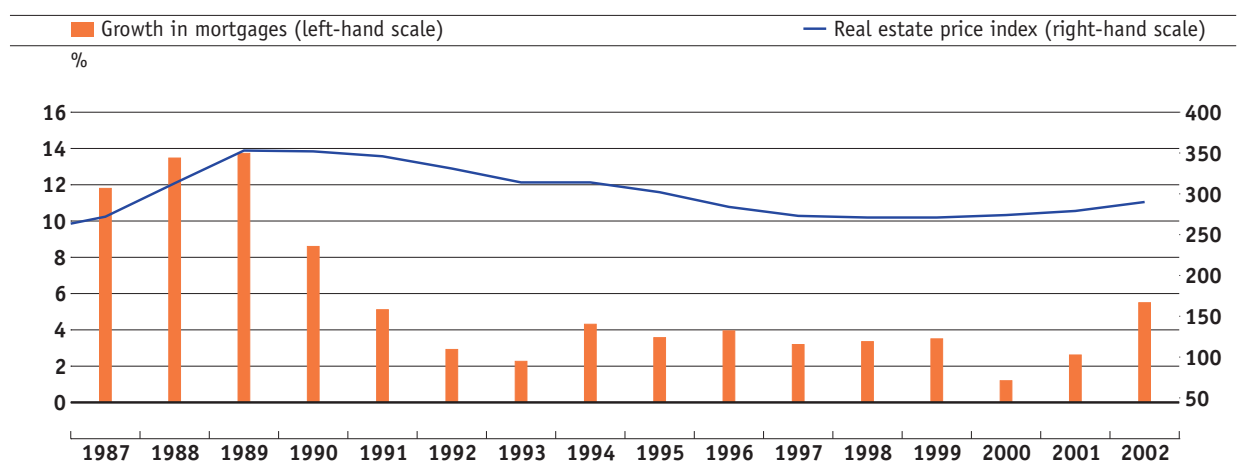
Chart 9: Sources: SNB; FBC.

A long-term view taking economic conditions into account shows that the volume of lending has remained within reasonable limits in recent years. Between 1992 and 2002, total mortgage loans rose by an average of 3.3%, whereas real estate prices declined by an average of 1.3% p.a. over the same period. Consequently, there is no sign of a speculative bubble accompanied by high growth in mortgages, as there was in the late eighties (see Chart 10). Similarly, by the end of last year, there had been virtually no change in total customer claims: both domestic and foreign claims were the same as at year-end 1998 (see Chart 11). This suggests that overall the banks have pursued a cautious lending policy and have not succumbed to the temptation of expanding lending aggressively by lowering lending standards.<sup>17</sup> Accordingly, neither mortgages nor customer claims seem to show any structural imbalances that could result in a divergence between lending business and economic fundamentals.

Loans to domestic customers declined by more than 10% in 2002. However, this sharp decline should be seen at least partly as a correction of the equally strong rise in domestic lending in 1999. The aggregate data do not provide any information on whether the decline was primarily due to lower demand from companies or to lending restrictions imposed by the banks. The decline in customer claims is not in itself a problem. Indeed, if it is due to an active reduction in lending volume in order to minimise credit risks, it should be seen as positive for financial stability. However, an exceptionally restrictive lending policy could possibly accentuate the economic downswing.

Mortgages and real estate prices

Chart 10



17 The sharp rise in loans to foreign customers in 1996–1998 is attributable to the big banks, which were realigning their strategic focus and expanding their international presence in this period.

Chart 10:  
Sources: SNB; Wüest & Partner.

### Low interest-rate risk in the banking book<sup>18</sup>

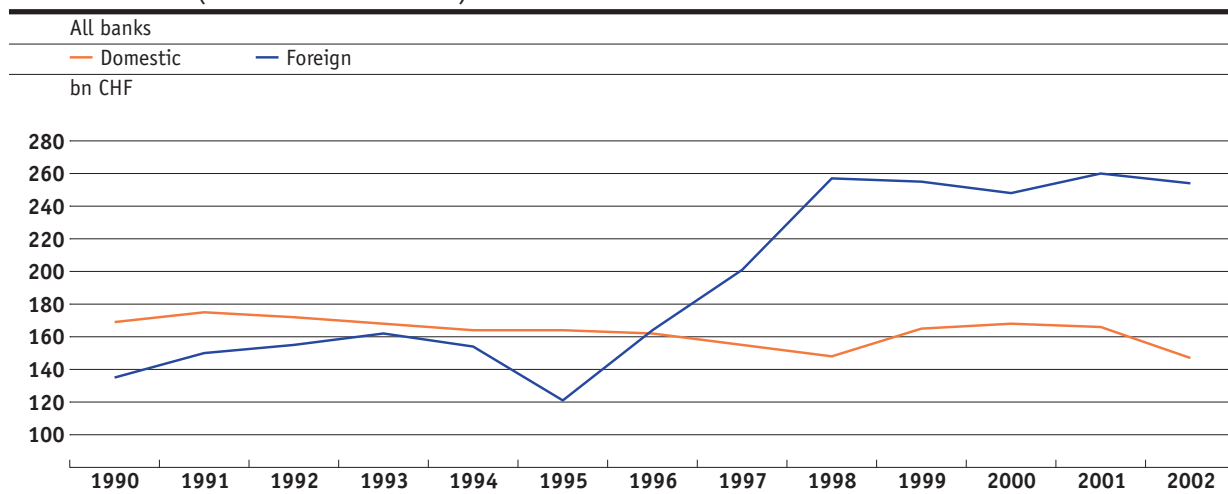
An interest-rate risk exists if there is serious mismatching between the repricing maturities of a bank's assets and liabilities. In principle, banks use short-term liabilities to refinance long-term loans. As a result, interest rates on assets may be fixed for a longer period than interest rates on liabilities. A rise in interest rates would reduce the present value of assets more significantly than the present value of liabilities, thus reducing the net present value of the bank. The interest-rate risk statistics compiled by the SNB for the FBC measure the exposure of individual banks to changes in interest rates. Essentially, the change in the present value of individual on-balance

and off-balance sheet items resulting from a change in interest rates is calculated. The sum of the changes in the present value of both assets and liabilities shows the change in the net present value of the bank.

An evaluation of these interest-rate statistics shows that the Swiss banking system as a whole is well hedged against the risk of changes in interest rates. If the general level of interest rates were to rise by 200 bp, the aggregate result for all banks would be a reduction in the net present value corresponding to 0.5% of available capital. At most banks, interest-rate risk is close to this mean. Major deviations are comparatively rare (see Chart 12).

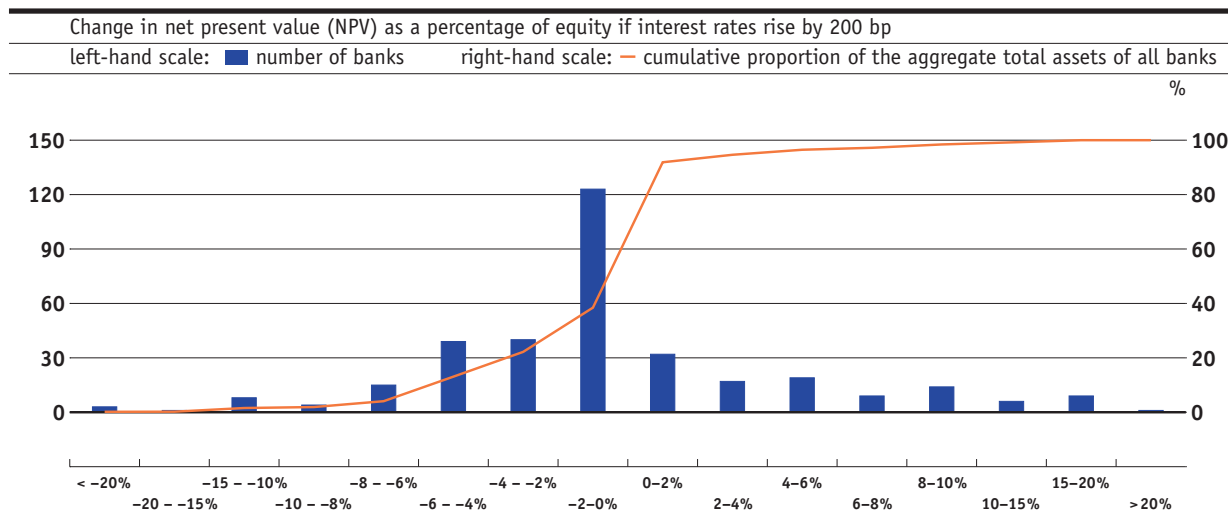
Customer claims (secured and unsecured)

Chart 11



Interest-rate risk

Chart 12



18 Sources: SNB, FBC.

Charts 11 and 12:  
Sources: SNB; FBC.

Since banks generally finance long-term lending through short-term borrowing (“maturity transformation”), the low level of interest-rate risk in the Swiss banking sector seems surprising. The explanation is that although the banks grant long-term loans, interest rates are only fixed for short periods. Variable-rate mortgages are the best example. At the same time, banks are not simply financed through sight deposits. A considerable proportion of their financing comprises debt papers (for example, bonds and mortgage-backed securities). The discrepancy between the effective maturities of assets and liabilities is therefore low.

However, it should be noted that these data only relate to the valuation risk resulting from interest-rate movements. For instance, a sharp rise in interest rates is likely to cause more borrowers with variable-rate loans to have difficulty paying, resulting in a higher risk to the bank. This risk, however, manifests itself in a higher credit risk, but does not have any impact on the interest-rate risk statistics. It should also be stressed that the present estimate of interest-rate risk is based to some extent on the banks’ hypotheses regarding the extent to which fluctuations in interest rates can be passed on to their clients.<sup>19</sup>

#### **Slight reduction in market risk<sup>20</sup>**

Market risk is the risk that changes in market prices will generate profits or losses. These price risks mainly affect banks’ trading portfolios, financial assets and non-consolidated stakes in other companies.<sup>21</sup> At year-end 2002, market risk was 8.5% of the aggregate minimum capital requirement of all Swiss banks (2001: 9.3%). A breakdown by type of bank shows that the risk was 8.8% at the cantonal banks (2001: 9.3%), 11.3% at the big banks (consolidated data; 2001: 11.9%), 4.7% at the regional banks (2001: 4.6%) and 2.6% at the Raiffeisen banks (2001: 3.3%). The market risk exposure of the Swiss banks thus declined slightly year-on-year.

Measured in this way, the *direct* valuation risk, i.e. the risk that the banks’ own securities portfolio could lose value, seems low relative to the credit risk. However, the figures need to be put into context on two counts. Firstly, they do not reflect the *indirect* risks arising from the financial markets. For example, the performance of asset management and investment banking operations depends heavily on financial market trends. These risks thus have an impact on bank revenues, although they do not appear on the balance sheet<sup>22</sup>. Secondly, this risk factor only relates to potential changes in the value of financial investments without taking costs into account. If a bank has high overheads, for example for own-account trading operations, a lower (but still positive) trading profit could cause it to report a loss. This risk may be substantial. For example, the aggregate trading performance of all banks dropped from CHF 12.4 billion in 2000 to CHF 7.5 billion in 2002. Assuming unchanged costs, that would have trimmed profits by almost CHF 5 billion.

19 For certain items such as sight deposits, savings deposits and some mortgages, the procedure for adjusting interest rates is not specified exactly in the agreement with the client. In such cases, therefore, the banks must present a hypothesis on how the interest rates will be adjusted.

20 Sources: SNB and FBC.  
21 We take the minimum capital requirements derived from items exposed to market risks as a measure of market risk.

22 Section 2.3 above (profitability) addresses the extent to which indirect financial market risks can affect the banks’ profits.

## 2.5 Capital adequacy

At year-end 2002 the banks as a whole had a lower capital base than at the end of the previous year. The level of capitalisation is nevertheless adequate overall and only a few banks are characterised by a low level of capital adequacy. Historically and by international standards, Swiss banks can be considered to be well capitalised.

### Regulatory framework

Swiss banking law prescribes minimum capital adequacy ratios.<sup>23</sup> Essentially capital backing is required for all on-balance-sheet assets and off-balance-sheet operations. The underlying risks vary depending on the counterparty and collateral provided. To take account of this, the various items are risk-weighted. 8% of these risk-weighted items must be backed by capital at all times (*required capital*).

The *eligible capital* used to calculate capital adequacy comprises three components: core capital, supplementary capital and additional capital. Core capital comprises paid-up share capital, reserves and profits. Supplementary capital comprises hidden reserves, subordinated debt papers and certain hybrid instruments (e.g. mandatory convertible bonds). Additional capital comprises unsecured, subordinated and fully paid-up liabilities that are subject to a lock-up clause which prevents the payment of interest and repayment of the principal if the capital adequacy requirements are not met.

If banks have more eligible capital than required, they are said to have *excess capital*. The risk-weighted capital ratio comprises eligible capital as a percentage of *risk-weighted assets*. The *non-weighted* capital ratio comprises eligible capital as a percentage of the total assets.

### Slight decline in eligible capital<sup>24</sup>

The *eligible capital* in the Swiss banking sector as a whole declined by 2.7% year-on-year in 2002. The cantonal banks (-0.2%), regional banks (+1.3%) and Raiffeisen banks (+9.9%), which focus on lending business, have a stable capital base. The increase in eligible capital at the Raiffeisen banks is mainly due to the fact that reporting has been extended to include a further 37 banks. A decline in the eligible capital at the cantonal banks as a result of the massive loss at BCU<sup>25</sup> was prevented by a recapitalisation. By contrast, the big banks' eligible capital declined by 6.3%, with an even more pronounced drop registered on a consolidated basis: core capital dropped 7.7% year-on-year while total eligible capital declined by 8.6%. This is mainly attributable to lower revenues and higher write-downs. Share buy-backs also reduced their capital base.

At the same time, the entire banking sector and especially the big banks reduced risk-weighted assets and thus their minimum capital requirement. *Required capital* for the sector as a whole was reduced by 4.1%. At the big banks the reduction was 5.8% at company level and 8.5% on a consolidated basis. Since their total assets have increased, this was due first and foremost to a reduction in assets requiring capital backing.<sup>26</sup> Secondly there has been a shift in the classes of assets. The proportion of assets with a higher risk weighting has been reduced in favour of assets with a lower risk-weighting.

### Stable risk-weighted capital ratios<sup>27</sup>

Overall, neither the economic slowdown nor the stock market downtrend has had a major impact on the capitalisation of the banking sector as a whole. *Risk-weighted capital ratios* have remained stable. At the big banks, excess capital as a percentage of required capital has declined 2.0% at the company level and 0.4% on a consolidated basis. The ratio has declined by 3.1% at the cantonal banks and by 0.3% at the regional banks. A rise of 8.9% was registered by the Raiffeisen banks (see Chart 13).

23 Cf. Banking Ordinance, Articles 11–14.

24 Sources: SNB and FBC.

25 Cf. section 2.3 (profitability).

26 Not all assets have to be backed by capital. In addition, some claims can be offset against liabilities, reducing the

volume of assets requiring capital backing (cf. Article 12f Banking Ordinance).

27 Sources: SNB and FBC.

A long-term comparison shows that the capitalisation of the Swiss banks is still good (see Chart 14). Since 1989 risk-weighted capitalisation of individual banks has risen considerably. At the start of this period, about 28% of banks had 20% or less excess capital. By 2002, the proportion had dropped to just over 2%. There has thus been a substantial reduction in the number of banks that only just meet the capital adequacy requirements.

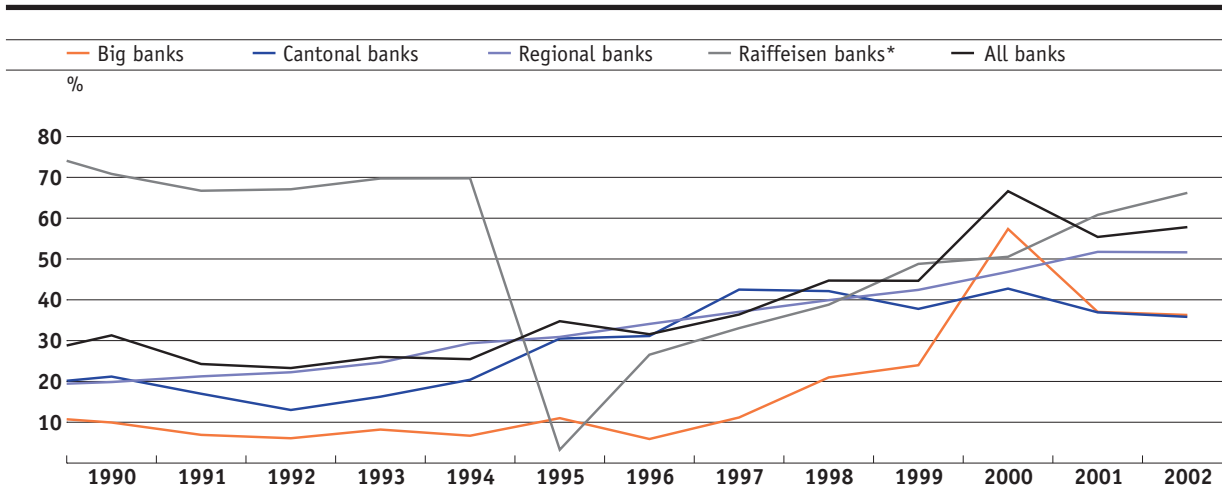
The *non-weighted capital ratio* has declined slightly at all categories of banks (all banks -3.7%; cantonal banks -2.8%; regional banks -0.2%; Raiffeisen banks -2.3%). There was also a reduction at the big banks (-8.1% at company level, -2.7% on a consolidated basis) (see Chart 15).

### Mixed picture at the big banks<sup>28</sup>

Contrary to the situation at the other types of banks, the two capital ratios have diverged at the big banks in recent years. While the risk-weighted ratios are essentially rising, the non-weighted ratios are declining. In other words, capital coverage of total assets is declining but they are able to report a rise in risk-weighted capital ratios. An international comparison highlights this divergence (see Chart 16). On the one hand, the two big Swiss banks<sup>29</sup> have the

Excess capital in % of required capital

Chart 13



Excess of capital in % of required capital (individual banks)

Chart 14

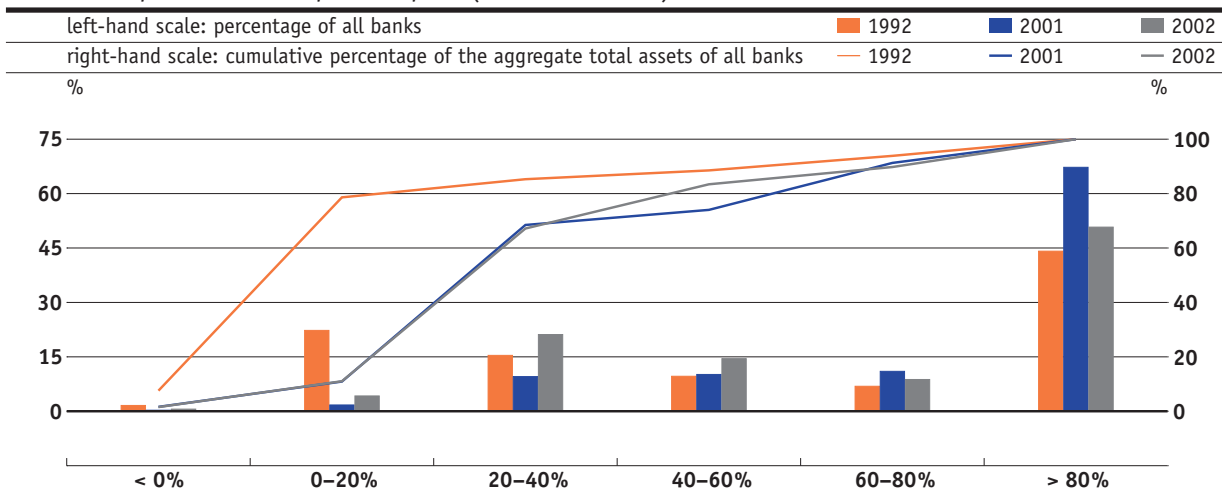


Chart 13: Sources: SNB; FBC.  
\* A significant proportion of capital at the Raiffeisen banks comprises the members' obligation to pay in additional capital. Since 1995, only part of this can be included in

eligible capital, hence the sharp drop in capital at the Raiffeisen banks. It will be excluded entirely when the New Basel Accord comes into account.

Chart 14: Sources: SNB; FBC.

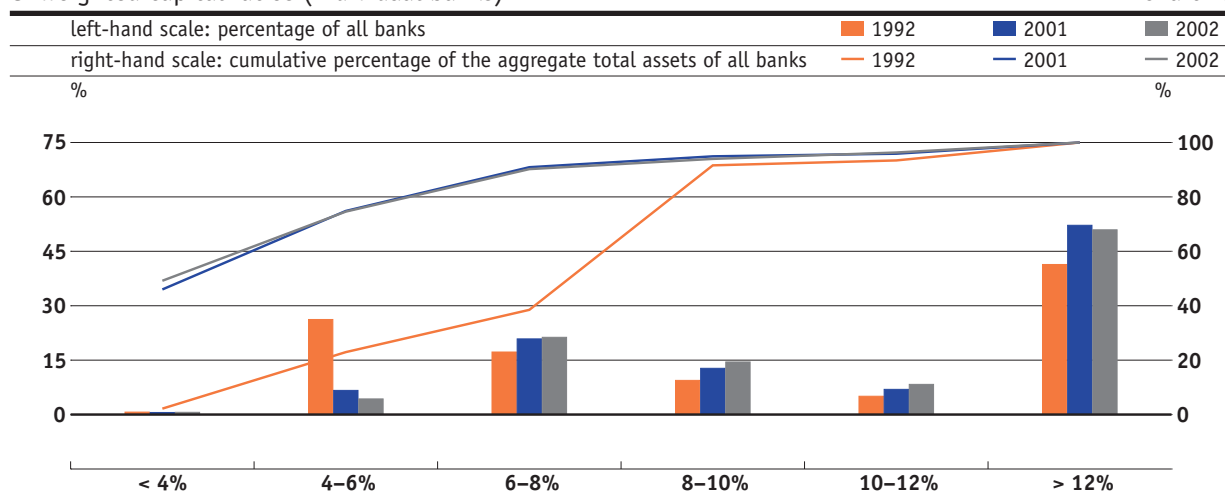
28 Sources: SNB, FBC and annual reports.  
29 Data on a consolidated basis.

highest risk-weighted capital ratios<sup>30</sup> among the 50 major international banks. On the other hand, they are ranked among the last-placed banks in terms of non-weighted capital ratios<sup>31</sup>. This is partly because interbank claims account for a high proportion of the balance sheet by international standards (27%). Moreover, mortgages and other secured customer claims total 18%. These items result in relatively high total assets, but according to capital requirements only represent a low risk. If the non-weighted capital

ratio were merely calculated on the basis of assets for which capital backing is required, rather than total assets, the capital ratio for the big banks would be 5.2% rather than 3.7%.<sup>32</sup>

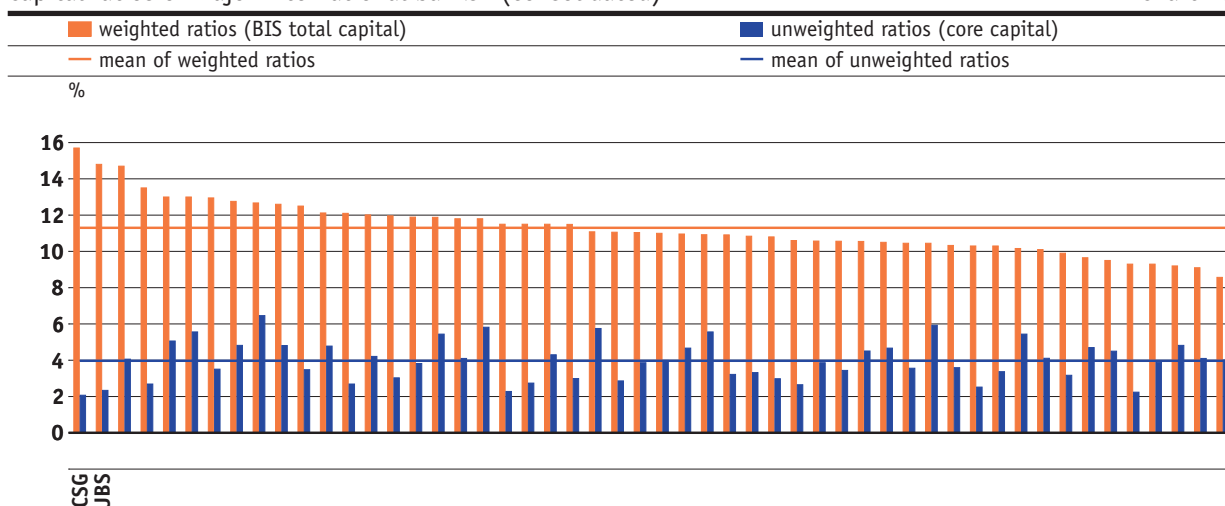
Unweighted capital ratios (individual banks)

Chart 15



Capital ratios of major international banks\* (consolidated)

Chart 16



30 Risk-weights according to Bank for International Settlements (BIS).

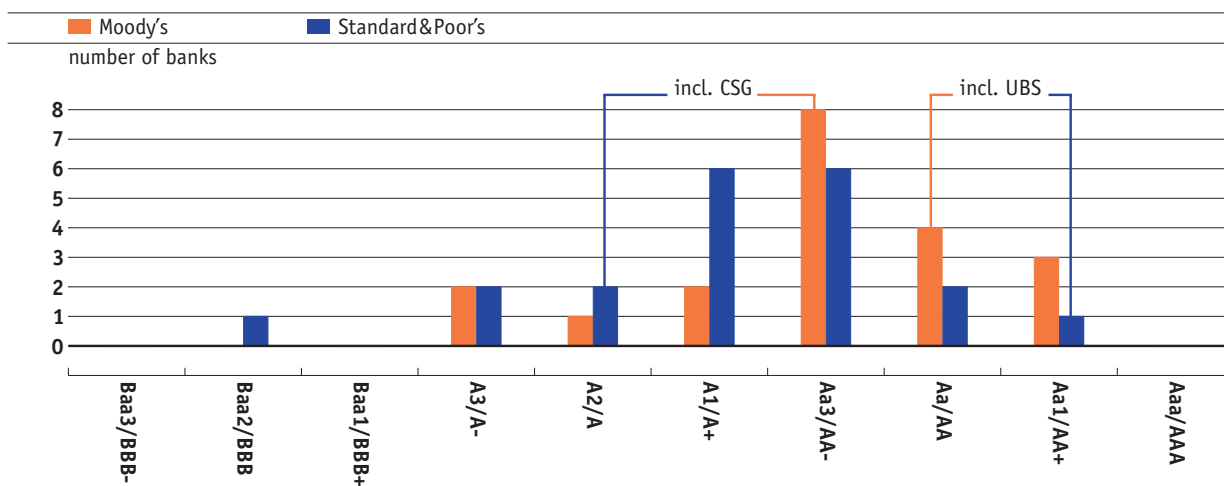
31 Core capital as a percentage of total assets.

32 These quotients were calculated at the company level and therefore differ from the quotients calculated on a consolidated basis in Chart 16.

Chart 15:  
Sources: SNB; FBC.

Chart 16:  
Source: Annual reports for 2001.  
\* Comprises the five largest banks in the USA, Canada, Japan and all European countries according to "The Banker" (July 2002), where their total assets are over USD 100 bn.





## 2.6 Market assessment of the solidity of Swiss banks

Market assessment on the soundness of a bank is reflected in credit ratings, yield spreads and share prices. Although these indicators suggest that the Swiss banking sector is in relatively good shape, its position has deteriorated considerably over the past few years. This trend is mainly due to difficulties at certain banks.

### General deterioration in credit ratings<sup>33</sup>

20 of the 356 banks in Switzerland are rated by either Moody's or Standard & Poor's. In 2002 Standard & Poor's downgraded Banca de Gottardo by one grade and CS and CSFB by two grades, while Moody's upgraded Valiant Bank. With a few exceptions, all the rated banks have a medium to very high rating. As well as their ratings, the rating agencies issue an outlook showing the anticipated medium-term trend. Overall, the outlook reports issued by both rating agencies contain more anticipated downgradings than upgradings in Switzerland, indicating that a further deterioration in ratings is to be expected.

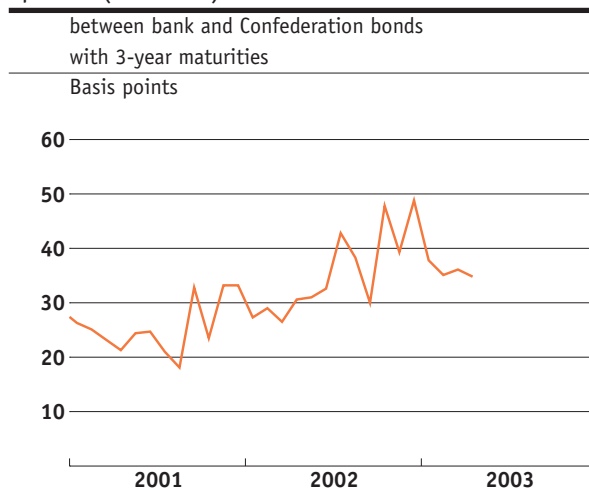
Comparing the two major Swiss banks, CS Group and UBS, with 18 among the world's largest banks shows that UBS ranks among the top-rated banks while CS Group is at best in the middle ground (see Chart 17). In 2002 Standard & Poor's downgraded CS

Group by two grades to "A" while Moody's outlook downgraded it by one grade to "Aa3 negative". UBS experienced only an outlook downgrade (Standard & Poor's) to "AA+ negative". The ratings/outlooks for about half of the world's largest banks was also reduced.

### Increase in the yield spread on bank bonds<sup>34</sup>

The yield spread between bank bonds and sovereign bonds is a further indicator of market assessment of the soundness of banks. The higher the credit risk and/or the lower the liquidity of a bond,

Spreads (all banks) Chart 18



<sup>33</sup> Sources: Moody's and Standard & Poor's.

Chart 17: Sources: Moody's; Standard & Poor's, May 2003.

\* Comprises 20 of the world's largest banks according to "The Banker" (July 2002) provided they are rated by both Moody's and Standard & Poor's.

Chart 18: Source: SNB.

the higher the spread between the bond and a risk-free government bond. Overall, there has been a rise in the spread between the bank bond index, which comprises 21 banks, and the government bond index since the middle of 2001 (see Chart 18). This essentially reflects the rise in the spreads at two cantonal banks (BCG and BCV) and at CS Group (see Chart 19). However, since the start of 2003 a slight decline has been observed.

### Decline in the market capitalisation of banks

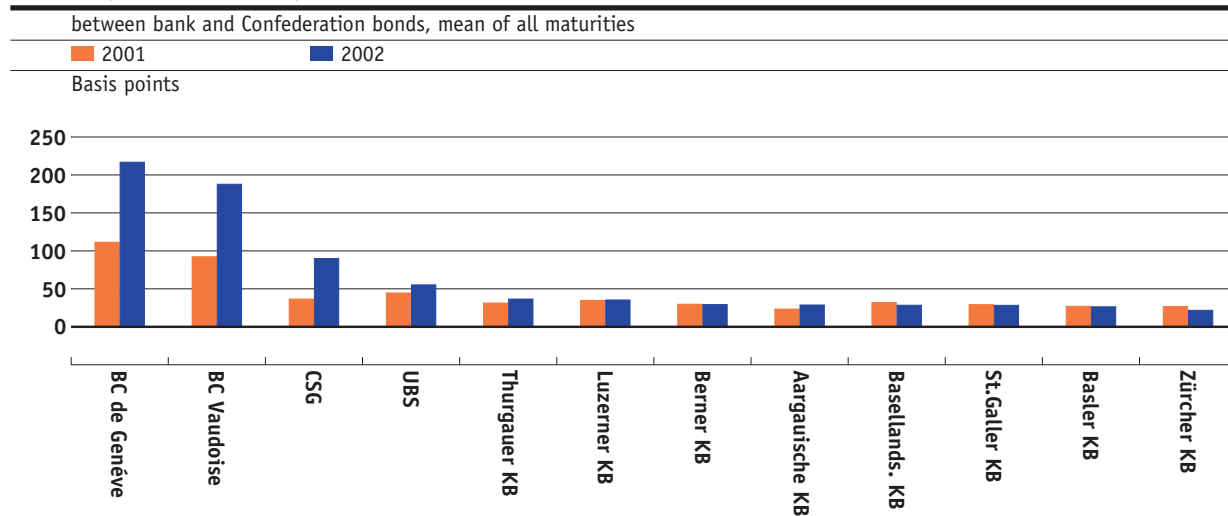
The market capitalisation of a bank reflects the market assessment of its net present value. The

change in a stock market index for the banking sector can thus be seen as an indicator of the market valuation of the banks included in the index.

The SPI banking index rose steadily until the start of 2001, with the exception of a sharp dip in 1998. Since then it has been declining (see Chart 20). Comparison with the bank indices for the USA and Europe shows a similar but less pronounced trend in other countries. However, this is mainly attributable to the lower diversification of the SPI banking index and the dominance of the two major Swiss banks. All three indices are currently only slightly above the 1997 level.

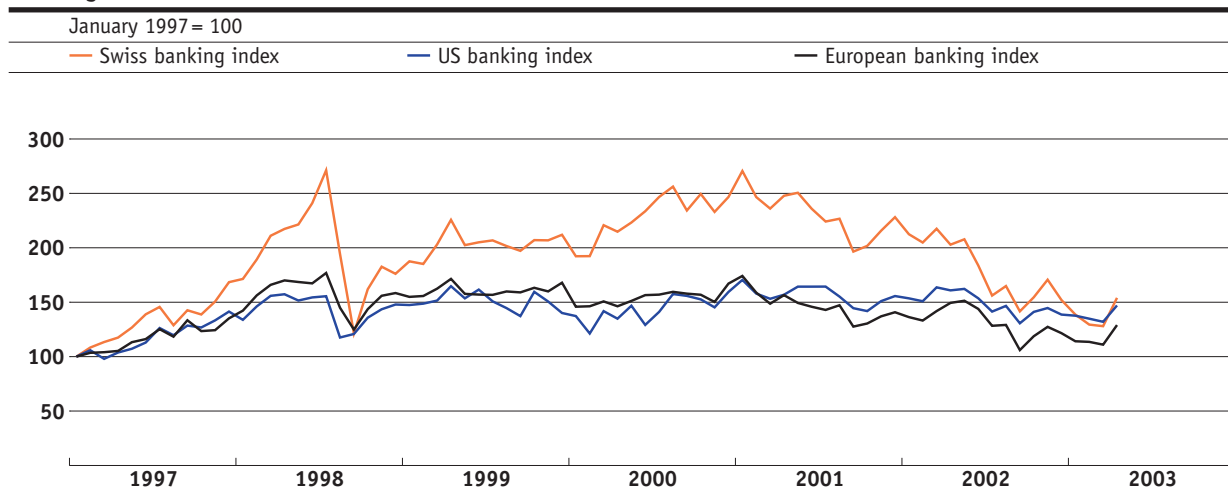
Spreads (individual banks)

Chart 19



Banking indices: Switzerland and abroad

Chart 20



34 Sources: SNB, FBC and Thomson Financial Datastream.

Chart 19: Source: Thomson Financial Datastream.

Chart 20: Source: Thomson Financial Datastream.

The Swiss National Bank assigns banks to various categories for statistical purposes. The main categories are: big banks, cantonal banks, regional and savings banks, Raiffeisen banks, trading and stock exchange banks, and private banks.

*Big banks:* The big banks – Credit Suisse (CS), Credit Suisse First Boston (CSFB) and UBS – are by far the largest group in the Swiss banking sector in terms of total assets, earnings and employees. They are universal banks offering a full range of banking services in Switzerland and abroad. At the end of 2002 they accounted for 64% of the total assets of all banks in Switzerland. The remaining 36% was split between some 350 other banks. At year-end 2002, the big banks accounted for 35% of total domestic lending business, i.e. total customer claims and mortgages. They also play a key role in the interbank sector, asset management and derivatives transactions.

*Cantonal banks:* The main feature of a cantonal bank is that the canton must own over a third of the bank's equity and have more than a third of the voting rights. These days, most of the cantonal banks are universal banks with a strong focus on savings and mortgage business. The cantonal banks accounted for 34% of total domestic lending at year-end 2002. The canton may provide full or partial guarantee for their liabilities. At the end of 2002 the 24 cantonal banks accounted for 14% of the aggregate total assets of all banks in Switzerland.

*Regional banks and savings banks:* The business focus of the regional banks and savings banks (subsequently referred to as "regional banks") is similar to the cantonal banks, but their geographical reach is normally narrower. Most of the regional banks belong to the Association of Swiss Regional Banks (RBA). RBA-Holding acts as an umbrella organisation for the regional banks and provides various services for

them. At year-end 2002 the regional banks accounted for 4% of the aggregate total assets of all banks in Switzerland and 10% of the domestic lending business.

*Raiffeisen banks:* These banks belong to the Swiss Association of Raiffeisen Banks. The association guarantees member banks' liabilities, while they guarantee the liabilities of the association itself. This group of banks has a federal structure and is based on cooperative principles. The roughly 1 million members of the cooperative are the owners of the Raiffeisen banks. At year-end 2002 the total assets of all Raiffeisen banks amounted to 4% of the aggregate total assets of the Swiss banks and they accounted for 11% of the domestic lending market.

*Trading and stock exchange banks:* These are mainly universal banks whose activities comprise commercial loans to trade, industry and commerce plus mortgage lending. The stock exchange banks specialise in securities transactions and asset management. The trading and stock exchange banks accounted for 5% of the aggregate balance sheet total of the sector at year-end 2002 and 6% of domestic lending.

*Private banks:* Private banks specialise in (off-balance-sheet) asset management. They accounted for 0.2% of domestic lending at year-end 2002 and 0.7% of the aggregate total assets of the Swiss banking sector. Providing they do not advertise publicly for deposits business, they are not subject to the statutory capital adequacy and disclosure requirements applying to other banks. They may be sole proprietorships, partnerships or limited liability companies, which means the owners have personal liability.

For further information and data see: The Banks in Switzerland, SNB (annual publication).

*Regional banks:* Ten of the largest regional banks (RBA) signed a cooperation agreement to enable them to carry out joint projects (e.g. in IT and private banking). Luzerner Regiobank, IRB Interregio Bank and Valiant Bank merged in December 2002 under the roof of Valiant Holding, which will rank among the 15 largest banks in Switzerland on the basis of its total assets. Smaller and medium-sized regional banks have also set up closer alliances: 32 regional banks have agreed contractually to form Clientis AG, which is scheduled to start operating in 2004. There were also several mergers and takeovers of smaller regional banks.

*Raiffeisen and cantonal banks:* The Raiffeisen group plus eight cantonal banks (Appenzell, Fribourg, Glarus, Lucerne, Nidwalden, Obwalden, St. Gallen and Thurgau) decided to set up their own securities clearing bank.

*Private banks:* Darier, Hentsch & Cie and Lombard Odier & Cie merged in summer 2002 to form the Lombard Odier Darier Hentsch & Cie. The Dutch bank Rabobank acquired a 28% stake in Bank Sarasin & Cie AG last year.

## 3 Financial market infrastructure

### 3.1 Introduction

A safe and efficient financial market infrastructure is a key prerequisite for a stable financial system. Alongside exchanges, the financial market infrastructure mainly comprises clearing and settlement systems for payments and for transactions in securities and other financial instruments (subsequently referred to as payment and securities settlement systems).

Payment and securities settlement systems harbour a number of risks (see Box 3). All systems that could trigger a systemic risk and thus jeopardise the stability of the financial system are regarded as systemically important. In the event of serious operational failures, such systems could cause widespread credit or liquidity problems. At the same time, credit or liquidity problems affecting one member could spread to the others through the system. Systemically important payment and securities settlement systems may thus be either the cause of a systemic crisis or the channel through which it spreads. Precautions can be taken to reduce this systemic risk, for example through organisational and technical measures that minimise operational risks and contingency plans that reduce the vulnerability of a system should a crisis occur. Moreover, suitable rules and tools can be used to reduce the probability of credit or liquidity risks spreading.

Deciding which systems are systemically important is not an exact science. In practice a number of criteria are used. These include, specifically, the total value or level of individual transactions settled via the system, the type of transactions (e.g. foreign exchange, money market and capital market transactions) and links to other systems. Another important factor from the SNB's viewpoint is whether the system is used for clearing or settlement of transactions that have a bearing on the implementation of monetary policy. On the basis of these criteria, the following payment and securities settlement systems at the very least are classed as being of systemic importance for the Swiss financial system: the Swiss Interbank Clearing (SIC) payment system, the SECOM securities settlement system, the Continuous Linked Settlement (CLS) multi-currency payment system and the SIS x-clear central counterparty system. A brief outline of these systems is given below, together with an assessment of the inherent credit, liquidity and operational risks. We then look at two regulatory changes that have a direct bearing on efforts to ensure a safe and efficient financial market infrastructure.

## 3.2 Credit and liquidity risks

### **SIC and SECOM**

Swiss Interbank Clearing (SIC) is a real-time gross settlement (RTGS) system with a queuing mechanism. It has been operated since 1987 by Swiss Interbank Clearing AG. Payment instructions are settled continuously, individually and on a gross basis but only on the condition that the participant issuing the payment instruction has a corresponding balance on its giro account at the SNB. If the balance is not sufficient to cover the payment, the transaction is automatically placed in pending status in a queue file until sufficient funds are available. To facilitate liquidity management, users have access to all relevant information at all times. In particular, they are given information on their present account balance and pending payments. Moreover, the SNB provides intraday liquidity arrangements for SIC participants in the form of interest-free intraday repos. These are triggered via the Eurex Repo trading platform and can be settled within a few seconds via SIC and SECOM respectively. A full description of SIC can be found at [www.snb.ch](http://www.snb.ch).

The SECOM securities settlement system, run by SIS SegInterSettle AG (SIS), has been linked to SIC since 1995. This allows continuous settlement of securities transactions on the principle of delivery versus payment on a gross basis. In other words, delivery of the securities and transfer of funds take place simultaneously on the same value day. Settlement is normally three days after closing of the transaction. Users are kept informed at all times which transactions have been settled and which are still pending. To facilitate securities settlement, SIS offers participants securities lending and borrowing facilities. For additional information on SECOM please see [www.sec.sisclear.com](http://www.sec.sisclear.com).

The architectures of the SIC and SECOM systems allow a significant reduction in settlement-related credit and liquidity risks. Above all, intraday finality, i.e. continuous and irrevocable settlement of payments and securities deliveries, minimises credit and liquidity risks. Another key element is the settlement of payments via SIC through giro accounts at the SNB. Using these balances to make payments means that the recipient has a claim on the SNB once a transaction has been completed. Unlike claims on private-sector banks, claims on the SNB do not entail any credit or liquidity risks: since the SNB can issue legal tender, it can always meet its payment obligations in full. When assessing credit risks, the princi-

ple of delivery versus payment is particularly important as it eliminates the principal risk inherent in the settlement of securities transactions. Moreover, the various liquidity and securities management tools available to systems participants reduce liquidity risks. The experience gained with both systems shows clearly that both systems (and the link between them) play a key role in containing the systemic risks of Switzerland's financial sector and thus contribute to the stability of the financial system.

### **Continuous Linked Settlement**

The Continuous Linked Settlement (CLS) system has been offering settlement of foreign exchange transactions on a payment versus payment basis since September 2002. Both sides in a transaction are settled by simultaneously crediting or debiting the counterparties' accounts at CLS Bank, which has direct links to all RTGS systems in all countries with participating currencies (i.e. the Australian dollar, pound sterling, euro, Japanese yen, Canadian dollar, Swiss franc and US dollar). The direct participants have to meet payment obligations to CLS Bank in the relevant currencies between 7 a.m. and 12 noon Central European Time. At the end of May 2003 53 banks with direct links to the system were using CLS to settle foreign exchange transactions, including three Swiss banks: Credit Suisse First Boston, UBS and Zürcher Kantonalbank. A few other Swiss banks also used CLS to settle foreign exchange transactions as third parties, i.e. by using the services of a direct member. Detailed information on CLS can be found at [www.cls-group.com](http://www.cls-group.com).

The principle of payment versus payment eliminates principal risk in foreign exchange transactions. CLS thus plays a key role in reducing systemic risks in the settlement of such transactions and meets one of the long-standing demands of the central banking community. Its ability to reduce risk will depend on the market share it captures in the medium to long term. It is difficult to assess the extent to which CLS helps reduce liquidity risks. Two arguments suggest that it reduces these risks. Firstly, members only have to pay in net positions in the individual currencies, thus greatly reducing liquidity requirements on balance. Secondly, CLS has secured liquidity facilities that it can draw on if any participant should face payment difficulties. Conversely, the liquidity risks could be increased by the fact that payment obligations to CLS Bank are extremely time-critical, in other words, they have to be made via the RTGS systems almost exactly to the minute. That places very high demands on banks' liquidity management systems and normally requires access to intraday borrowing facilities at a central bank.<sup>35</sup>

### **SIS x-clear**

In consultation with the SNB, the FBC granted SIS x-clear AG (x-clear) a banking licence by its order of 19 March 2003. This was the regulatory precondition for x-clear to start operating on 5 May 2003 as a central counterparty. Its members are primarily Swiss users of the London-based trading platform virt-x. Its role as an intermediary enables trading parties to remain anonymous once a transaction has been closed and replaces the numerous counterparty risks faced by each party with a single counterparty risk. The x-clear system also allows settlement of transactions on a net basis if this is required by the counterparties. Further information on x-clear can be found at [www.ccp.sisclear.com](http://www.ccp.sisclear.com).

Guaranteed settlement by x-clear eliminates the mutual credit and replacement cost risks between participants and reduces liquidity risks.<sup>36</sup> However, it also results in a concentration of credit, liquidity and replacement cost risks at x-clear. Risk management is therefore vital. x-clear's risk management system comprises three elements: a mechanism for meeting margin calls, a default fund and equity. These three elements are designed to prevent systemic risks as a result of non-performance by one or more users of the system. Once it has evaluated the data for the first six months of operation, the FBC (in consultation with the SNB) will consider whether additional insurance will also be needed to cover the default risk, as in some foreign central counterparty systems.

To ensure that it can meet its delivery and payment obligations on time, x-clear must also have sufficient liquidity on both the cash and the securities side. It therefore deposits securities as collateral with SIS SegInterSettle AG (SIS), which is responsible for managing its liquidity position. SIS can use these securities to obtain liquidity either from the SNB (intraday or overnight repos) or from other banks. Temporary bottlenecks on the securities side can be bridged by securities lending.

Given the specific nature of x-clear's operations, the FBC – with the agreement of the SNB – has exempted it from certain regulatory requirements (liquidity, capital and risk diversification requirements). Since neither the FBC nor the SNB has any practical experience in the monitoring and regulation of a central counterparty and the reporting obligations for normal banking operations are not adequate for x-clear, they have imposed a special, near-real-time, risk-based reporting system. Further, x-clear is required to inform both authorities immediately if at any time the cumulative risk of its two biggest participants exceeds the current level of the default fund. The secretariat of the FBC and the SNB will evaluate the data they receive on the activities of x-clear. If necessary, on-site inspections will be carried out. Initial practical experience with the system will permit a more detailed assessment of the risk management situation. The regulators will therefore be monitoring the model continuously and will require modifications to be made as and when necessary.

<sup>35</sup> Most non-Swiss CLS participants use one of the two big Swiss banks as correspondent banks to make payments into the system in Swiss francs. Exceptions are Bank of America, Citibank and HSBC Bank, which settle their Swiss franc payment obligations through their Swiss subsidiaries.

<sup>36</sup> The liquidity risks are not eliminated entirely because x-clear cannot guarantee settlement on the value date.

### 3.3 Operational risks

Over the past few years, the operators and participants in payment and securities settlement systems and the regulatory authorities have been looking more closely at ways of increasing the operational reliability and resilience of the systems, improving contingency plans and reducing vulnerability to crises. This is due to the recognition that the demands made on operational reliability have risen as a result of the increasing globalisation and networking of financial market infrastructure. At the same time, a number of crises triggered by operational disruptions have made it clear how vulnerable the technical integrity of the various components are and how far-reaching the implications of operational disruptions can be for the stability of a financial system.

Operational problems may be caused either by a component of the financial market infrastructure itself or by external factors such as natural disasters or deliberate acts of sabotage. The terrorist attacks in New York on 11 September 2001 are an example of an operational disruption caused by external factors. Key elements of the local financial market infrastructure were forced to cease operating temporarily, causing liquidity bottlenecks for some market participants and disruption on the securities markets. However, considering the scale of the events, most systems proved extremely resilient and the shock to the financial markets was relatively small. Nevertheless, the events of 11 September 2001 clearly showed the importance of intact contingency plans to ensure the continued operation of settlement systems in the event of disruption to one or more elements of the financial market infrastructure.

An example of a problem caused within the system itself was the breakdown of the SIC on 17 June 2002 as a result of faulty hardware. The nature of the failure prevented the SIC switching to the back-up system and the entire system was out of action for several hours. This technical failure did not simply mean that SIC was unable to settle payments transactions during this period: because of the central role played by SIC in the Swiss financial market infrastructure, it also prevented the settlement of securities transactions in SECOM and the procurement and repayment of intraday liquidity.

These examples show that more attention needs to be paid to controlling operational risks given the growing interdependence of the financial markets and the rising complexity of settlement procedures. A distinction can be made between two types of action. Firstly, suitable precautions need to be taken to increase the reliability of financial market infrastructure and reduce the probability of a crisis caused by operational problems. Secondly, organisational and technical measures need to be taken to maintain operation in the event of a crisis or restore operation within a short time if operational problems should occur despite all the precautions that have been taken. That essentially means ensuring that both the operators and systems users have suitable contingency plans and back-up systems and that these are tested regularly. Moreover, the contingency plans for the individual systems need to be carefully co-ordinated. In other words, cross-system and cross-infrastructure solutions are required to prevent inconsistencies and safeguard resilience of the financial system.

A number of measures have been introduced in Switzerland in recent years to improve the reliability and resilience of systems, reduce their vulnerability and enhance interaction. In particular, the operator of SIC introduced a number of technical modifications following the systems breakdown to prevent a similar incident recurring in the future. To further improve reliability and resilience in the medium to long term various organisational and technical measures geared to eliminating current weaknesses are being defined and tested. Moreover, prior to the introduction of CLS, various precautions were taken to ensure that direct participants are able to obtain intraday liquidity from the SNB and ensure that time-critical payments to CLS Bank can be made, even in the event of a crisis. Alongside technical adjustments to the systems involved, this required various organisational measures to ensure that the system operator, participants and SNB are able to take rapid action.



### 3.4 Regulatory changes

Ensuring the safety and efficiency of systemically important payment and securities settlement systems is a major goal for all regulatory authorities. The rising importance of this goal in the context of general efforts to ensure the stability of the financial system is reflected in a number of regulatory changes. On the one hand, increasingly widespread use of recognised international standards is placing a variety of demands on payment and securities settlement systems and their operators. At the same time, the oversight of payment and securities settlement systems has been put on a formal statutory footing in most countries in recent years. The new National Bank Law in Switzerland will also explicitly define oversight of payment and securities settlement systems as one of the SNB's tasks.

#### **Increasingly widespread use of international standards**

In 2000 the Committee on Payment and Settlement Systems (CPSS) of the Bank for International Settlements published ten core principles for systemically important payment systems ([www.bis.org](http://www.bis.org)). In 2001 the CPSS and the International Organisation of Securities Commissions (IOSCO) jointly issued 19 recommendations for securities settlement systems ([www.bis.org](http://www.bis.org)). Both standards contain minimum requirements. They are directed at all financial markets and are used regularly by the International Monetary Fund (IMF) and the World Bank to assess the national regulatory framework and the resistance of the financial sector to crises.

Alongside a well-founded legal basis, the core principles for systemically important payments systems specify various requirements relating to rules and procedures for the system in order to reduce credit and liquidity risks. They also recommend using central bank money as means of payment and stress the importance of the operational reliability of the system and adequate contingency plans and back-up sites to make the system resistant to crises. Further, the core principles demand fair and open access to the system and effective, accountable and transparent governance and administrative arrangements.

The recommendations for securities settlement systems also look at clearing and settlement risks, the legal and operational risks of securities settlement procedures and the governance and administrative structure of the systems operators. In addition, a number of recommendations are made that relate

specifically to the settlement of securities transactions. For instance, they recommend that the creation of a central counterparty should be considered and that securities lending and borrowing be encouraged. The settlement of transactions should take place on the principle of delivery versus payment, not later than three days after the conclusion of the transaction.

As complement to the CPSS-IOSCO recommendations, the Group of Thirty (G30), an international body comprising representatives of the private sector, the public sector and academic research, published the report "Global Clearing and Settlement: A Plan of Action" in 2003 ([www.group30.org](http://www.group30.org)). This report contains 20 best practice recommendations for financial markets in the developed world. These recommendations aim to reduce the inefficiencies and risks inherent in the settlement of cross-border securities transactions. Alongside these recommendations, the report contains concrete proposals on action to be taken by market participants, service providers and the public sector in a five to seven-year time frame in order to achieve these goals.

#### **The new National Bank Law**

The new National Bank Law, which is currently being discussed by the Swiss parliament, proposes that the SNB should have explicit powers to oversee payment and securities settlement systems. The SNB defines oversight as all of its efforts to influence the rules and architecture of payment or securities settlement systems. In this function, the SNB will pay particular attention to systemically important payment and securities settlement systems.

A three-step oversight approach is proposed. In the first step, operators of payment systems are required to provide statistical data. This enables the SNB to exclude smaller payment systems from close oversight from the outset. The second step comprises extended disclosure requirements and applies to both securities settlement systems and payment systems where the total value of transactions handled means that a systemic risk cannot be ruled out. Extensive information on such systems is required to enable the SNB to decide whether they are of systemic importance for the stability of the financial system. Finally, the SNB can impose minimum requirements on systems that could jeopardise the stability of the financial system. These requirements will be closely based on recognised international standards.

## Risks in payment and securities settlement systems

### Box 3:

The Bank for International Settlements distinguishes between the following types of risks in payment and securities settlement systems:

*Credit risk:* the risk that a party within the system will be unable to fully meet its financial obligations within the system either at the due date or at any time in the future.

*Principal risk* (specific type of credit risk): the risk that a party within the system will be unable to fully meet its financial obligations under a securities or foreign exchange transaction either on the due date or at a later date, even though the other party ensures full and timely fulfilment of its obligation.

*Liquidity risk:* the risk that a party within the system will have insufficient funds to meet its financial obligations on the due date, although it may be able to do so at some time in the future.

*Replacement cost risk:* risk that a party fails to deliver its side of the transaction by the due date. This may leave the solvent counterparty with an unhedged market position or prevent it from realising potential gains on a position. The resulting exposure represents the replacement cost of the original transaction at current market prices.

*Legal risk:* the risk that a poor legal framework or legal uncertainties will cause or exacerbate credit or liquidity risks.

*Operational risk:* the risk that operational factors such as technical malfunctions or human error could cause or exacerbate credit or liquidity risks.

*Systemic risk:* the risk that the failure of one of the participants to meet its obligations, or a disruption in the system itself, will cause other system participants or financial institutions in other parts of the financial system to be unable to meet their obligations when due. Such a failure may cause widespread liquidity or credit problems and, as a result, might threaten the stability of the financial system or even of the economy as a whole.