

2004

SCHWEIZERISCHE NATIONALBANK
BANQUE NATIONALE SUISSE
BANCA NAZIONALE SVIZZERA
BANCA NAZIUNALA SVIZRA
SWISS NATIONAL BANK



Financial Stability Report

Bericht zur Finanzstabilität

Rapport sur la stabilité financière

Swiss National Bank Financial Stability Report

Bericht zur Finanzstabilität
Rapport sur la stabilité financière

Table of Contents

4	Bericht zur Finanzstabilität 2004 (Übersicht)
4	Vorwort
4	Bankensektor
7	Finanzmarktinfrastruktur
9	Rapport sur la stabilité financière 2004 (Synthèse)
9	Avant-propos
9	Secteur bancaire
12	Infrastructure des marchés financiers
14	Financial Stability Report 2004
15	Introduction
15	Overall Assessment
17	Data and data sources
18	Part I: Banking Sector
19	1 General conditions
23	2 Profits
25	3 Risks
30	4 Capital base
34	5 Market assessment
36	6 Stress index for the banking sector
38	Part II: Financial Market Infrastructure
39	1 Introduction
40	2 New statutory basis for oversight of payment and securities settlement systems
42	3 SIS x-clear
46	4 Continuous Linked Settlement (CLS)

Bericht zur Finanzstabilität 2004 (Übersicht)

Vorwort

Der vorliegende Bericht behandelt die unter dem Aspekt der Stabilität massgebenden Tendenzen des schweizerischen Finanzsektors. Es ist das zweite Mal, dass die SNB einen Jahresbericht zur Stabilität veröffentlicht.¹ Die SNB bezweckt damit, die Öffentlichkeit über den Zustand des Finanzsystems zu informieren. Sie übermittelt auf diese Weise ihre Einschätzung der Stabilität des Finanzsystems und stellt der Öffentlichkeit eine Übersicht an Informationen und Indikatoren zur Verfügung. Der Stabilitätsbericht gibt der SNB die Möglichkeit, auf Spannungen oder Ungleichgewichte hinzuweisen, die ein Risiko für die Stabilität darstellen könnten. Der vorliegende Bericht dient jedoch nicht dazu, die Solvenz einzelner Finanzinstitute zu beurteilen.

Ein stabiles Finanzsystem zeichnet sich dadurch aus, dass dessen Komponenten ihre Funktion erfüllen und sich gegenüber Schocks als widerstandsfähig erweisen. Dieser Bericht beschränkt sich auf zwei wesentliche Komponenten des Finanzsystems: den *Bankensektor* und die *Finanzmarktinфраstruktur*.

Bankensektor

Die Einschätzung der Stabilität des Bankensektors erfolgt in zwei Schritten. Zuerst analysieren wir die Entwicklung der Risikofaktoren, die im makroökonomischen Umfeld und auf den Finanzmärkten für die Stabilität des schweizerischen Bankensystems relevant sind. Anschliessend beurteilen wir die Widerstandsfähigkeit des Bankensystems in Bezug auf diese Risikofaktoren. Dazu messen wir die Rentabilität, die eingegangenen Risiken sowie die Eigenmittelausstattung im Bankensektor. Ergänzend berücksichtigen wir Modelle, die den auf den Bankensektor ausgeübten Stress und dessen Bezug zum makroökonomischen Umfeld zahlenmässig erfassen.

Im Jahr 2003 war das Umfeld des schweizerischen Bankensektors durch gegensätzliche Entwicklungen geprägt; insgesamt waren die Bedingungen jedoch besser als im Vorjahr. Das Wirtschaftswachstum erwies sich als stark in den Vereinigten Staaten (USA), blieb aber in der Europäischen Union (EU) und in der Schweiz schwach oder war sogar negativ. Aus den verfügbaren Indikatoren geht hervor, dass diese Situation die Bonität der Debitoren nur geringfügig beeinflusst hat. Die Konkursrate stieg in der Schweiz,

während die Risikoprämien auf den Schulden der grossen schweizerischen und internationalen Unternehmen zurückgingen. Parallel dazu verzeichneten die Börsen bei anhaltender Volatilität einen deutlichen Anstieg.

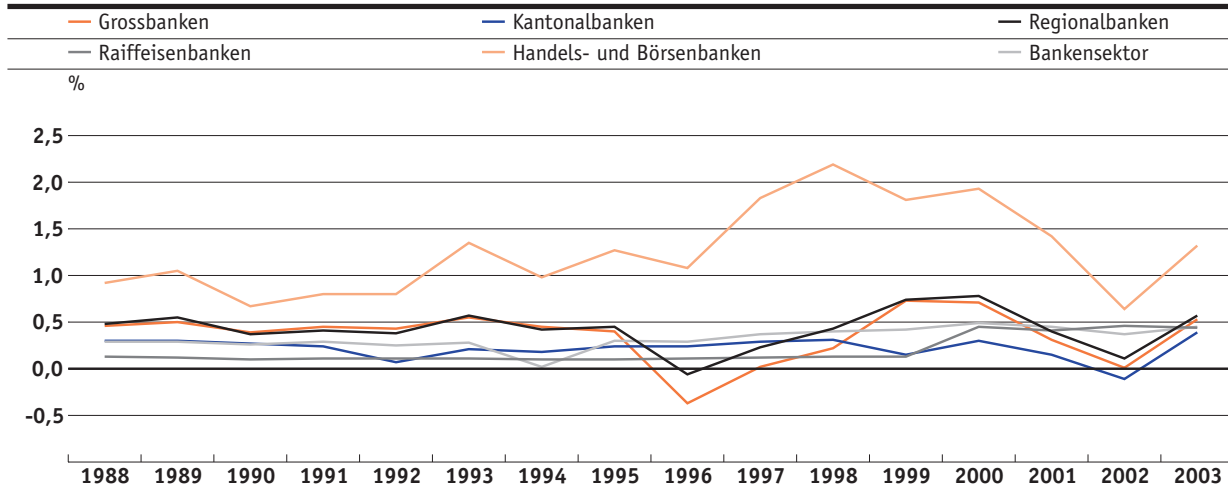
Unter diesen teils positiven, teils negativen Bedingungen ergab sich im schweizerischen Bankensektor eine starke Zunahme der Gewinne (vgl. Grafik 1). Das Ausmass des Anstiegs – es schwankte beträchtlich von einer Bank zur andern – ist vor allem darauf zurückzuführen, dass zwei grosse Institute, nämlich die Credit Suisse Group (CSG) und die Banque Cantonale Vaudoise (BCV), wieder Gewinne verbucht haben, nachdem sie im Jahr 2002 Verluste erlitten hatten (vgl. Grafik 2). Zudem bewirkte ein Rückgang des Aufwands (Rückstellungen und Kosten) eine Verbesserung der Rentabilität bei stagnierenden oder sogar rückläufigen Einnahmen (Nettoertrag aus den Zinsen, den Kommissionen und dem Handel). Die Abnahme der Rückstellungen im Bankensektor steht im Gegensatz zur eher ungünstigen Wirtschaftslage und, in einem geringeren Mass, zur Entwicklung der Schuldnerqualität. Diese Tatsache ist vorwiegend auf eine relativ vorsichtige Politik der Banken im Kreditbereich zurückzuführen. Gleichzeitig stehen die stagnierenden Erträge aus Wertschriftengeschäften im Kontrast zu Kursgewinnen an den Börsen. Diese Tatsache ist mit einem rückläufigen Geschäftsvolumen und mit einem zunehmenden Konkurrenzdruck bei den Kommissionen zu erklären.

Die hohen Erträge führten zu einer deutlichen Erhöhung der Eigenmittel im Bankensektor und verbesserten damit dessen Fähigkeit, Schocks abzufedern. Ende 2003 überstieg der Eigenmittelüberschuss den historischen Durchschnitt (vgl. Grafik 3). Gemessen an den Vorschriften über die risikogewichteten Eigenmittelquoten gemäss der Basler Eigenkapitalvereinbarung lag ausserdem die Eigenmittelausstattung der Grossbanken erheblich über dem internationalen Durchschnitt. Wird dagegen die ungewichtete Eigenmittelquote als Massstab herangezogen – sie unterliegt in der Schweiz keiner Regelung –, war jedoch die Eigenmittelausstattung der Grossbanken im internationalen Vergleich unterdurchschnittlich. Dieser Kontrast ist teilweise dadurch erklärbar, dass die Schweizer Grossbanken einen beträchtlichen Teil an Aktiven mit schwacher Risikogewichtung halten (vor allem gesicherte Kredite und Forderungen gegenüber Banken).

¹ Der erste Stabilitätsbericht erschien im Quartalsheft der SNB (Nr. 2, Juni 2003, Seiten 60–85). Er ist auch auf der Internetseite der SNB abrufbar (www.snb.ch).

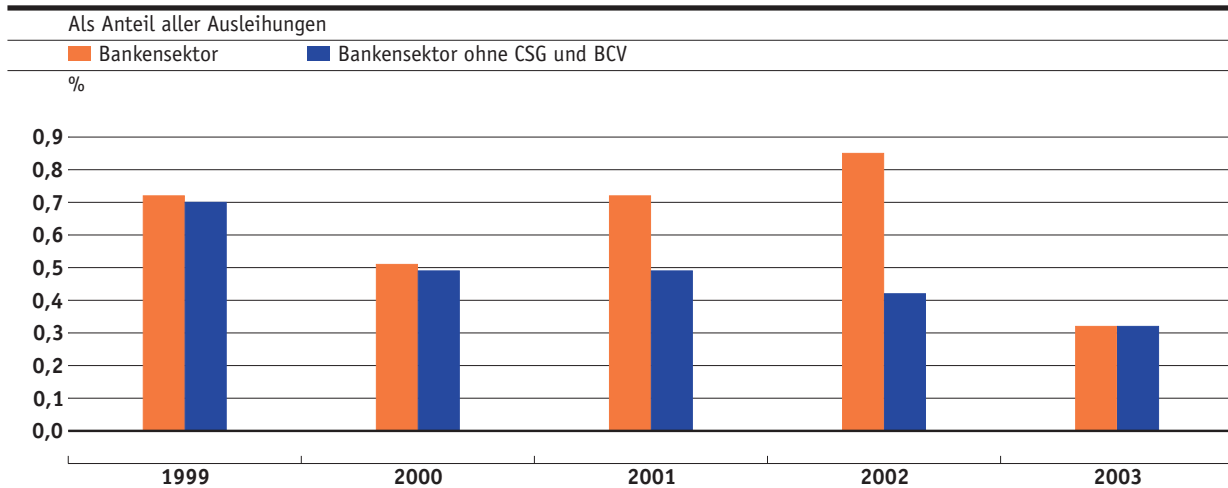
Return on Assets (nach Bankengruppen)

Grafik 1



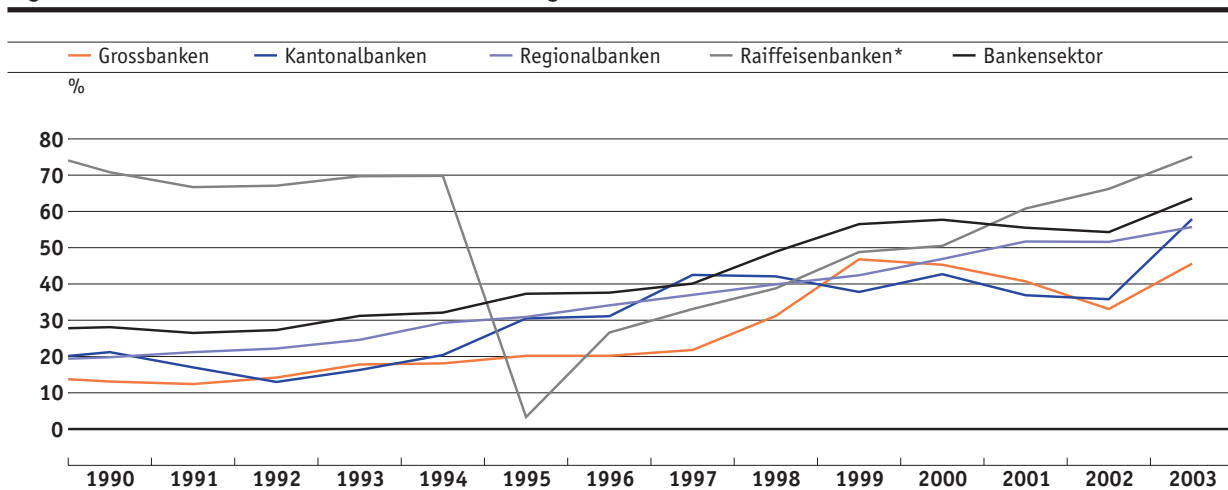
Wertberichtigungen und Rückstellungen

Grafik 2



Eigenmittelüberschuss in % der erforderlichen Eigenmittel

Grafik 3



Grafiken 1, 2 und 3:
Quellen: SNB; EBK

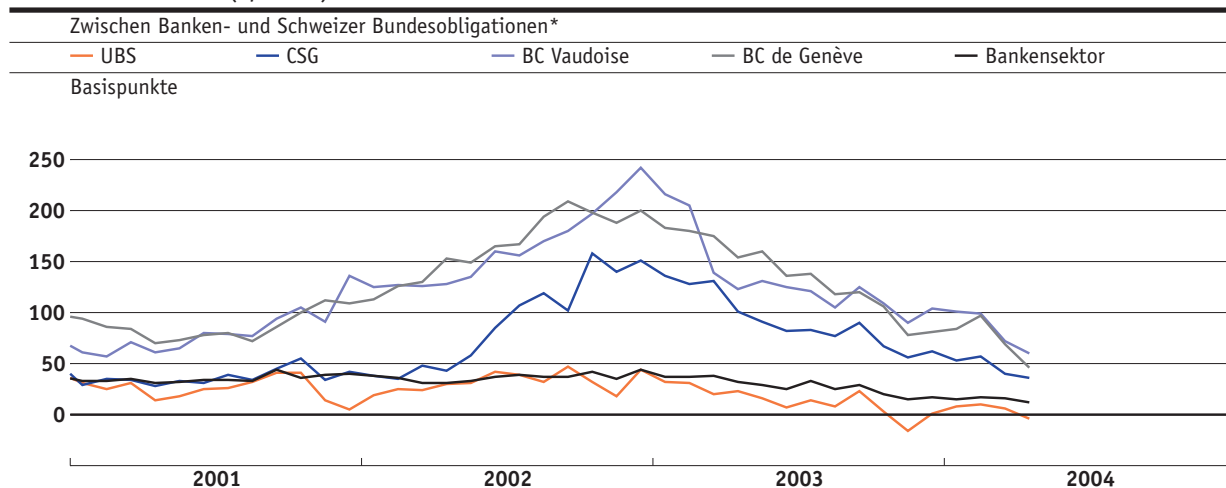
* Einen wesentlichen Teil der Eigenmittel der Raiffeisenbanken bildet die Nachschusspflicht der Genossenschafter. Seit 1995 kann diese nur noch teilweise angerechnet werden, was zu einem Einbruch bei den Eigenmitteln führte.

Die aus den Bewertungen durch die Finanzmärkte hervorgehenden Indikatoren bekräftigen den Eindruck von Widerstandsfähigkeit, den die Gewinne und die Eigenmittelausstattung der Banken vermitteln. Insbesondere aufgrund der Ratings der einschlägigen Agenturen sowie der Differenzen in den Obligationenrenditen erscheint der schweizerische Bankensektor sowohl im historischen wie auch im internationalen Vergleich robust (vgl. Grafik 4).

Die Stabilität des Bankensektors kann mittels einer Reihe von Variablen gemessen werden, welche manchmal widersprüchliche Informationen liefern. Um diese Informationen zu aggregieren, hat die SNB einen Stressindikator (Stressindex) erarbeitet.² Dieser Indikator ist eine Zusammenfassung einer Anzahl von Stresssymptomen. Er berücksichtigt insbesondere die Entwicklung der Gewinne, der Aktienkurse und der Risikoprämien auf den Obligationen des schweizerischen Bankensektors. Im Jahr 2003 wies der Stressindikator einen deutlich unter seinem historischen Durchschnitt liegenden Wert auf, was den Eindruck einer hohen Widerstandsfähigkeit des Schweizer Bankensektors bekräftigt (vgl. Grafik 5).

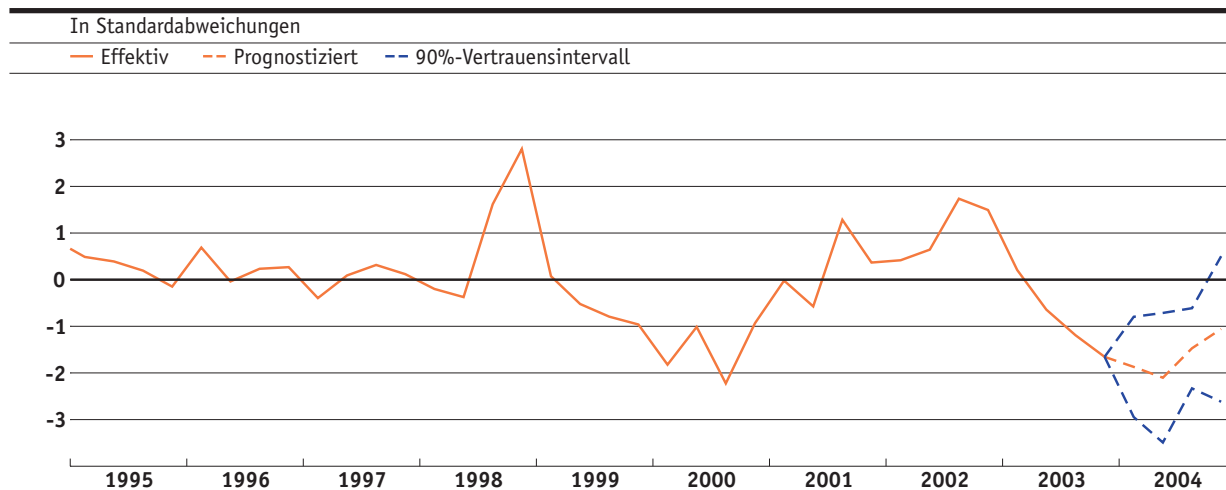
Renditedifferenzen (spreads)

Grafik 4



Stressindex*

Grafik 5



Grafik 4: Quellen: SNB; EBK; Datastream

* Mittelwert der Spreads auf allen Obligationen, welche die folgenden Kriterien erfüllen: fixe Couponauszahlungen; keine Optionen; in CHF; minimale Restlaufzeit von zwei Jahren. Stand am Ende des Monats.

Grafik 5: Quellen: SNB; EBK; Datastream; Wüest&Partner; Bundesamt für Statistik; Internationaler Währungsfonds

* Je höher das Niveau des Index, desto grösser ist das Stressniveau des schweizerischen Bankensektors. Der Index ist in Standardabweichungen von seinem historischen Durchschnitt (1987–2003) bemessen. Ein positiver (negativer) Wert bedeutet, dass der Stress grösser (kleiner) ist als der historische Durchschnitt.

2 Für eine detaillierte Beschreibung dieses Indikators siehe Kapitel 6 («Stress index for the banking sector») dieses Berichts.

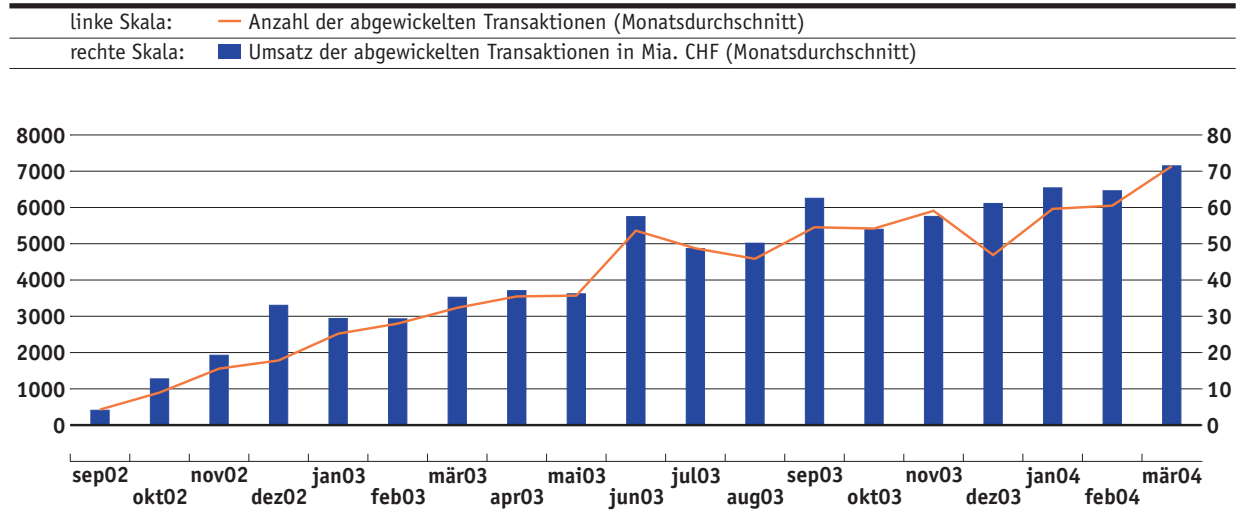
Bezüglich der Zukunftsaussichten sind wir der Auffassung, dass das makroökonomische Umfeld und die Finanzmärkte für die Stabilität des schweizerischen Bankensystems kein grosses Risiko bergen. Die Perspektiven für 2004 deuten nämlich auf einen Anstieg des Wirtschaftswachstums in der Schweiz und in der EU sowie auf einen anhaltenden Aufschwung in den USA hin. Zudem blieb der Preisauftrieb auf dem schweizerischen Immobilienmarkt im historischen und internationalen Vergleich moderat. Eine abrupte Anpassung dieses Markts nach unten – traditionellerweise ein gewichtiger Stressfaktor für den Bankensektor – erscheint daher unwahrscheinlich. Schliesslich geht aus den verfügbaren Indikatoren hervor, dass die weltweit wichtigsten Bankensektoren ebenfalls ziemlich robust sind. Die Gefahr einer durch Ansteckung übertragenen Krise ist somit für die Schweiz zurzeit klein.

Zwei potenzielle Spannungsfelder bestehen jedoch. Erstens könnte eine konjunkturelle Abschwächung – ein unwahrscheinliches, doch nicht auszuschliessendes Szenario – negative Auswirkungen auf die Qualität der Kreditportfolios und auf die Börsenkurse haben. Zweitens könnte, im Fall des wahrscheinlicheren Szenarios einer nachhaltigen Wirtschaftserholung, eine unerwartet starke Erhöhung der Zinssätze ebenfalls die Qualität der Kreditportfolios beeinträchtigen, da die Schulden der Haushalte und Unternehmen schwerer belasten würden. Aus unserer Szenario-Analyse geht hervor, dass der schweizerische Bankensektor über genügend Eigenmittel verfügt, um eine deutliche Verschlechterung der Konjunktur und der Börse sowie einen erheblichen Anstieg der Zinssätze zu verkraften (vgl. Box 1, Seite 28). Allerdings haben mehrere Banken, vor allem grosse Institute, angedeutet, dass sie ihre Risikobereitschaft erhöhen wollen. Sollte sich eine erhöhte Risikobereitschaft allgemein verbreiten, wäre der Bankensektor stärker anfällig auf Veränderungen des makroökonomischen Umfelds oder der Börsenlage.

Finanzmarktinфраstruktur

Im Bereich der Abrechnung und Abwicklung von Zahlungen und Geschäften mit Wertschriften und anderen Finanzinstrumenten verfügt der Finanzplatz Schweiz über eine gut funktionierende Finanzmarktinфраstruktur, die hinsichtlich Sicherheit und Effizienz auch im internationalen Vergleich sehr gut abschneidet. Aus Sicht der Stabilität des schweizerischen Finanzsystems besonders bedeutsam sind die innerhalb der so genannten «Swiss value chain» miteinander verbundenen Zahlungs- und Effektenabwicklungssysteme. Dazu zählen insbesondere das Zahlungssystem Swiss Interbank Clearing (SIC) und das Wertschriftenabwicklungssystem SECOM. Diese beiden Systeme haben sich seit Jahren bewährt und tragen aufgrund ihrer Architektur zu einer Minimierung der Abwicklungsrisiken bei. Durch ihre Verbindung ist namentlich die real-time Abwicklung von Effektengeschäften nach dem Prinzip Lieferung gegen Zahlung möglich.

Das neuste Element innerhalb der Swiss value chain ist die SIS x-clear, die seit dem Mai 2003 als zentrale Gegenpartei für die Teilnehmer an der elektronischen Handelsplattform virt-x fungiert. Die Einführung einer zentralen Gegenpartei bringt für deren Teilnehmer verschiedene Vorteile, insbesondere die Eliminierung der einzelnen Gegenparteiisiken. Da es jedoch gleichzeitig zu einer Risikokonzentration bei der zentralen Gegenpartei kommt, ist deren Risikomanagement von entscheidender Bedeutung. Das Risikomanagement von SIS x-clear besteht aus verschiedenen Instrumenten und ist ziemlich konservativ, so dass die Einführung dieses Systems aus Sicht der Stabilität des Finanzsystems insgesamt zu begrüssen ist. Auch das globale Mehrwährungszahlungssystem Continuous Linked Settlement (CLS), das die Abwicklung von Devisengeschäften nach dem Prinzip Zahlung gegen Zahlung ermöglicht, leistet einen positiven Beitrag zur Stabilität des Finanzsystems. Dank der seit Betriebsaufnahme im September 2002 erfolgten raschen Zunahme der über CLS abgewickelten Devisengeschäfte konnten die mit der herkömmlichen Abwicklung von Devisengeschäften verbundenen Risiken erheblich reduziert werden (vgl. Grafik 6).



Quelle: CLS Bank

Rapport sur la stabilité financière 2004 (Synthèse)

Avant-propos

Le présent rapport met en évidence les grandes tendances, sous l'angle de la stabilité, dans le secteur financier suisse. Il s'agit du deuxième rapport annuel que la BNS publie sur la stabilité.³ En publiant un tel rapport, la BNS a pour objectif de fournir au public des informations sur l'état du système financier. Ainsi, elle fait part de son évaluation de la stabilité de ce système et met à la disposition du public une synthèse d'informations et d'indicateurs. Le rapport permet à la BNS de signaler, le cas échéant, des tensions ou des déséquilibres susceptibles de constituer un risque en matière de stabilité. Ce rapport n'a cependant pas pour objet d'évaluer la solvabilité d'établissements financiers pris individuellement.

Un système financier stable est un système dont les diverses composantes remplissent leurs fonctions et sont en mesure de résister à d'éventuels chocs. Le présent rapport se concentre sur deux composantes essentielles du système: le *secteur bancaire* et l'*infrastructure des marchés financiers*.

Secteur bancaire

Notre évaluation de la stabilité du secteur bancaire se fait en deux étapes. Nous analysons d'abord l'évolution des facteurs de risques qui, dans l'environnement macroéconomique et financier, sont pertinents pour la stabilité du système bancaire suisse. Nous évaluons ensuite la sensibilité et la capacité de résistance du système bancaire face à ces facteurs de risques. Cette évaluation repose sur une mesure de la rentabilité, des risques encourus ainsi que de la dotation en fonds propres du secteur bancaire. Pour compléter notre analyse, nous utilisons les indications fournies par des modèles permettant de quantifier le stress subi par le secteur bancaire et son lien avec l'environnement macroéconomique.

En 2003, le secteur bancaire suisse a opéré dans un environnement contrasté, quoiqu'en amélioration par rapport à l'année précédente. La croissance économique a été sensible aux Etats-Unis (USA), mais toujours faible, voire négative, dans l'Union Européenne (UE) et en Suisse. Les indicateurs disponibles suggèrent que cette situation n'a eu qu'un impact modéré sur la qualité des emprunteurs. Alors que le taux de faillites a augmenté en Suisse, les primes de risque sur la dette des grandes entreprises suisses et

internationales ont diminué. Parallèlement, les marchés boursiers ont connu une nette progression, tout en restant volatils.

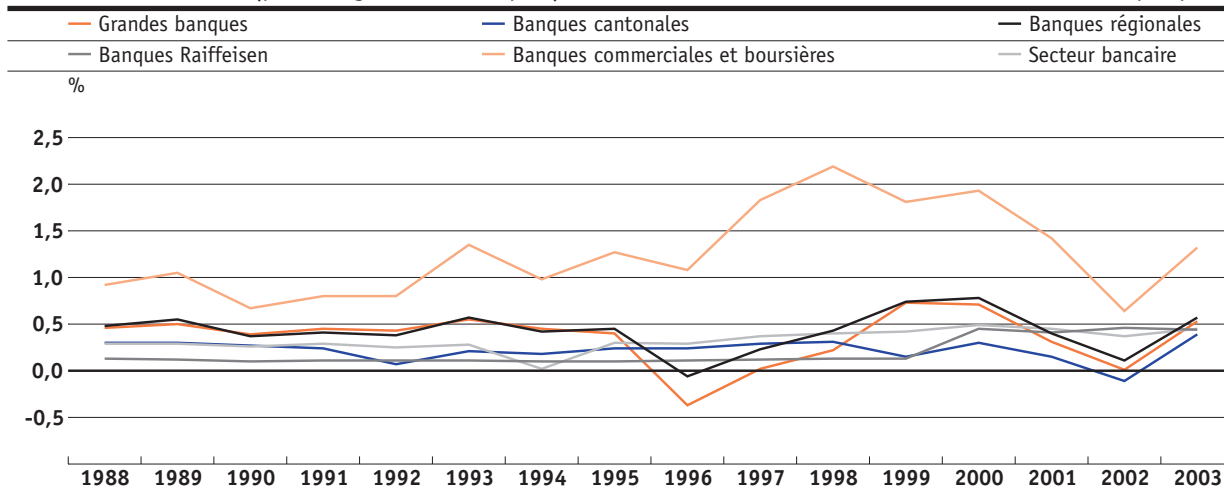
Dans cet environnement contrasté, le secteur bancaire suisse a enregistré une forte progression des bénéfices (voir graphique 1). L'amplitude de la progression, qui a varié considérablement d'une banque à l'autre, s'explique en grande partie par le retour aux bénéfices de deux grands établissements – le Credit Suisse Group (CSG) et la Banque Cantonale Vaudoise (BCV) – déficitaires en 2002 (voir graphique 2). Par ailleurs, l'amélioration de la profitabilité a découlé d'une baisse des charges (provisions et coûts), les revenus (le produit net des intérêts, des commissions et du négoce) ayant stagné, voire reculé. La diminution des provisions dans le secteur bancaire contraste avec le caractère peu favorable de la situation économique et, dans une moindre mesure, avec l'évolution de la qualité des emprunteurs. Cette situation peut s'expliquer notamment par une politique relativement prudente suivie par les banques en matière de crédits. Parallèlement, la stagnation des revenus liés aux opérations sur titres contraste avec la progression de la bourse. Ce contraste peut s'expliquer par une baisse du volume des transactions et par une augmentation de la pression concurrentielle sur les commissions.

Ces bénéfices élevés ont conduit à un renforcement sensible de la dotation en fonds propres du secteur bancaire et, partant, de sa capacité à absorber des chocs. A fin 2003, l'excédent de fonds propres – mesuré par rapport au minimum légal – se situait au-dessus de la moyenne historique (voir graphique 3). Par ailleurs, la dotation en fonds propres des grandes banques suisses – mesurée sur la base des normes de fonds propres pondérées, définies par l'accord de Bâle – était nettement au-dessus de la moyenne internationale. En revanche, leur dotation en fonds propres, mesurée sur la base du ratio de fonds propres non pondéré – ratio qui ne fait pas l'objet d'une réglementation en Suisse – était inférieure à la moyenne internationale. Ce contraste s'explique en partie par le fait que les grandes banques suisses détiennent une proportion élevée d'actifs dont la pondération-risque est faible (des crédits gagés et des créances sur les banques notamment).

³ Le premier rapport figure dans le Bulletin trimestriel de la BNS (no 2, juin 2003, pages 60 à 85). Il peut également être consulté sur le site Internet de la BNS (www.snb.ch).

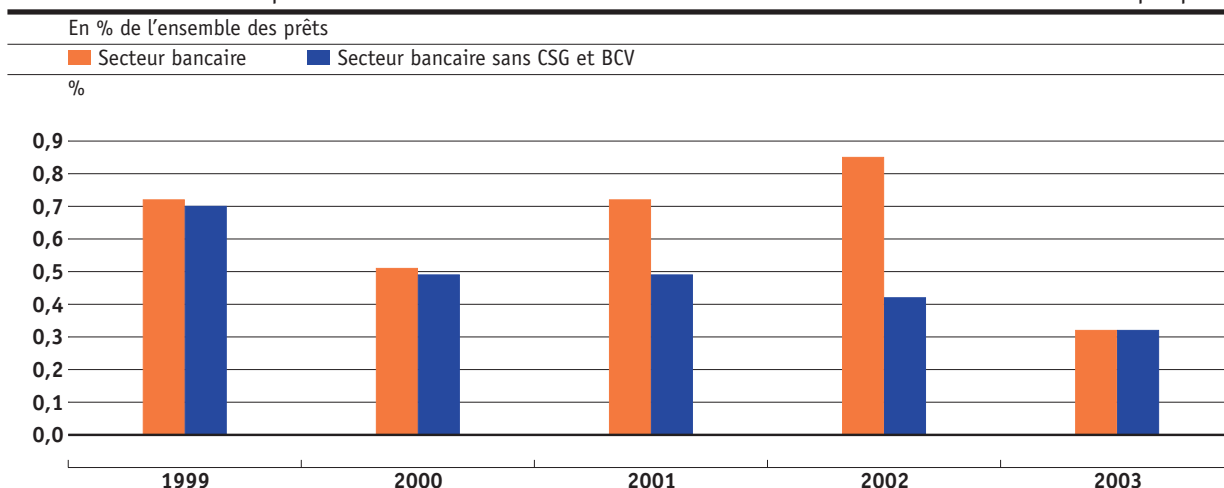
Rentabilité des actifs (par catégories de banques)

Graphique 1



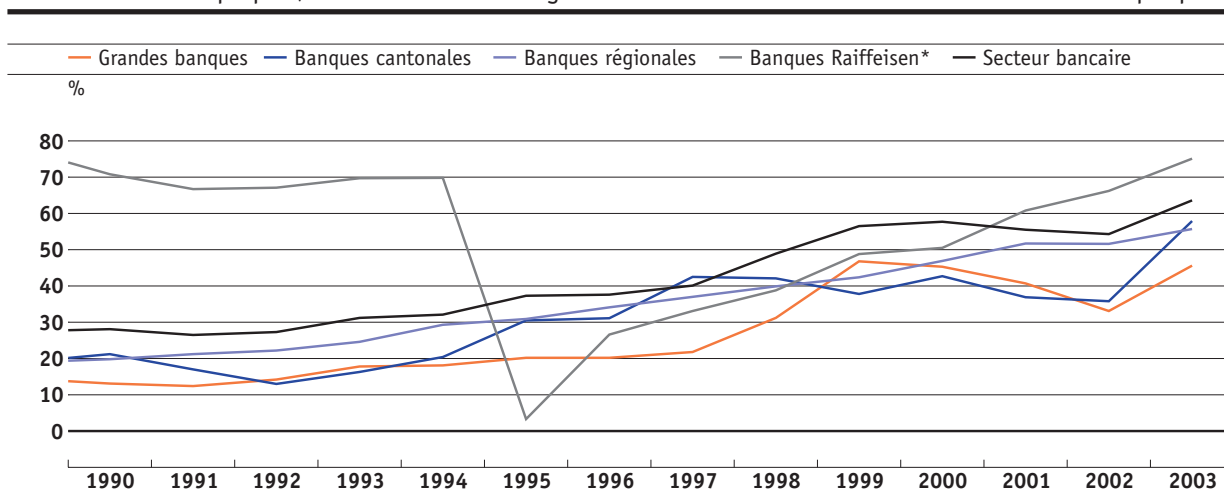
Correctifs de valeurs et provisions

Graphique 2



Excédent de fonds propres, en % du montant exigé

Graphique 3



Graphiques 1, 2 et 3:
Sources: BNS; CFB

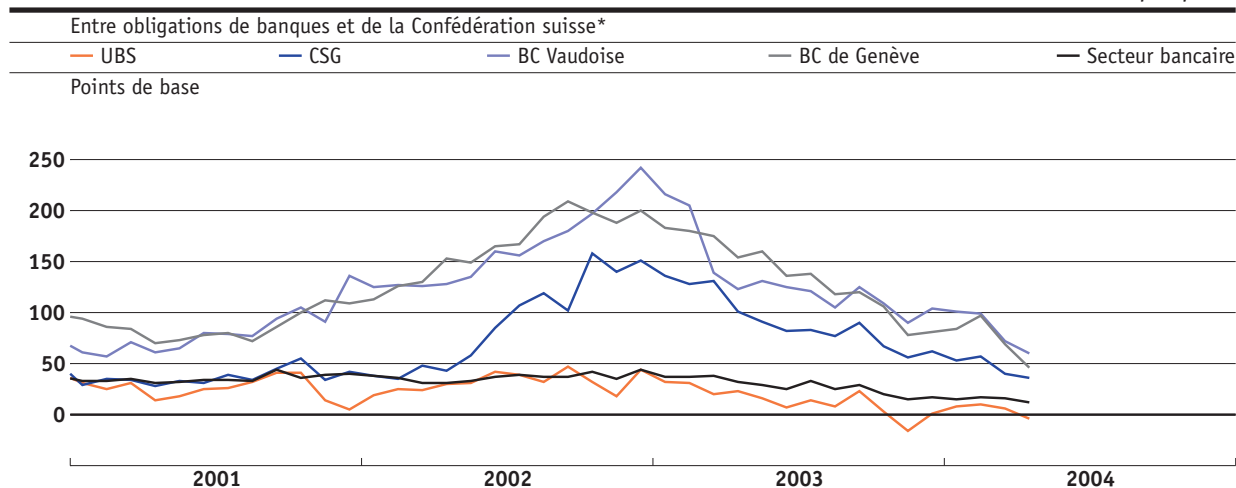
* Une part importante des fonds propres des banques Raiffeisen est constituée des versements supplémentaires auxquels se sont engagés les sociétaires. Depuis 1995, ces versements supplémentaires ne peuvent être comptés qu'en partie comme fonds propres, ce qui explique la forte diminution observée cette année-là.

L'impression de robustesse qui ressort des bénéfices et de la dotation en fonds propres des banques est corroborée par les indicateurs reflétant l'évaluation faite par les marchés financiers. Sur la base notamment des notations attribuées par les agences spécialisées et des écarts dans les rendements des obligations, le secteur bancaire suisse apparaît robuste, tant en comparaison historique qu'en comparaison internationale (voir graphique 4).

La stabilité du secteur bancaire peut être mesurée par le biais d'un ensemble de variables qui, prises individuellement, véhiculent parfois des informations contradictoires. Dans le but d'agrèger ces informations, la BNS a conçu un indicateur de stress.⁴ L'indice reflète en particulier l'évolution des fonds propres, des bénéfices, ainsi que du cours des actions et des primes de risque sur les obligations du secteur bancaire suisse. La valeur prise par cet indicateur en 2003 se situe nettement en dessous de sa moyenne historique, confirmant l'impression de robustesse du secteur bancaire suisse (voir graphique 5).

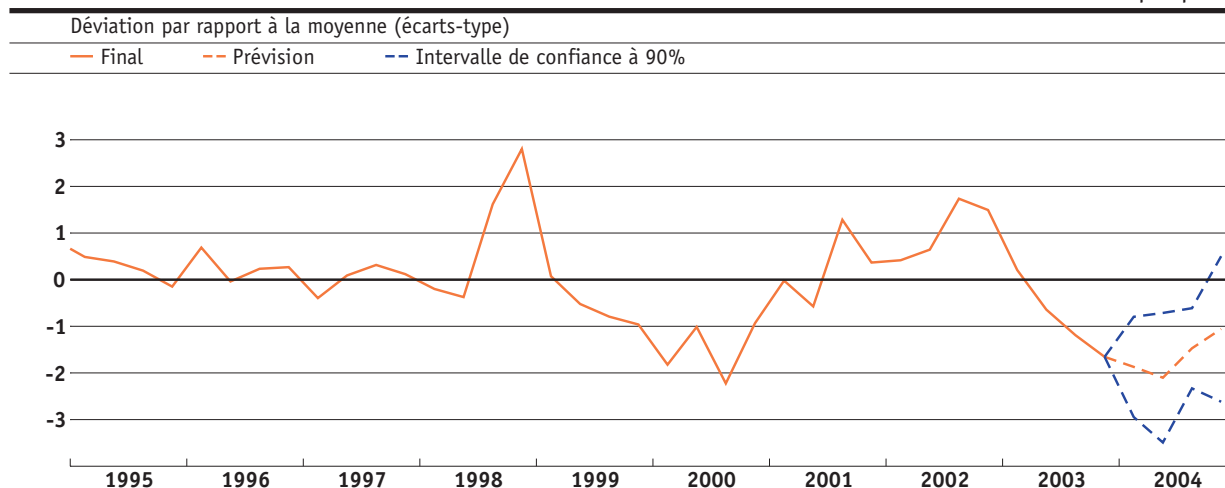
Ecarts de rendements

Graphique 4



Indice de stress*

Graphique 5



Graphique 4: Sources: BNS; CFB; Datastream

* Ecarts (spreads) moyens pour l'ensemble des obligations satisfaisant aux conditions suivantes: coupon fixe; absence d'options; libellés en CHF; durées résiduelles égales ou supérieures à 2 ans. Données de fin de mois.

Graphique 5: Sources: BNS; CFB; Datastream; Wüest & Partner; Office fédéral de la statistique; Fonds monétaire international

* Une valeur élevée de l'indice correspond à un niveau de stress élevé dans le secteur bancaire suisse. Une valeur positive (négative) signifie que le stress est supérieur (inférieur) à sa moyenne observée entre 1987 et 2003. La déviation par rapport à la moyenne est exprimée en termes d'écarts-type.

4 Voir la section 6 du rapport («Stress index for the banking sector») pour une description détaillée de cet indicateur.

En ce qui concerne les perspectives, nous considérons que l'environnement macroéconomique et financier ne présente pas de menace majeure pour la stabilité du système bancaire suisse. En effet, les prévisions pour 2004 indiquent un retour de la croissance économique en Suisse et dans l'UE ainsi qu'une poursuite de l'essor aux USA. De plus, l'augmentation des prix sur le marché immobilier en Suisse est restée modérée en comparaison historique et internationale. Un brusque ajustement à la baisse sur ce marché, qui constitue traditionnellement un facteur de stress majeur pour le secteur bancaire, apparaît donc improbable. Enfin, les indicateurs disponibles suggèrent que, sur un plan international, les principaux secteurs bancaires sont eux aussi relativement robustes. Le danger d'une crise par contagion est donc actuellement faible pour la Suisse.

Deux sources de tensions potentielles doivent néanmoins être relevées. Premièrement, un ralentissement de la conjoncture – scénario peu probable mais qui ne peut être exclu – pourrait avoir des répercussions négatives sur la qualité des portefeuilles de crédits ainsi que sur les cours boursiers. Deuxièmement, dans le scénario plus probable d'une reprise économique durable, une hausse des taux d'intérêt plus forte qu'anticipée pourrait elle aussi entraîner une dégradation de la qualité des portefeuilles de crédits en alourdissant le fardeau de la dette des ménages et des entreprises. L'analyse de scénarios que nous avons conduite indique que la dotation en fonds propres du secteur bancaire suisse est suffisante pour résister à une dégradation notable de la conjoncture et de la bourse ainsi qu'à une hausse sensible des taux d'intérêt (voir encadré 1, page 28). Plusieurs banques, en particulier de grands établissements, ont toutefois annoncé leur intention d'adopter un profil plus risqué. Une augmentation de la prise de risques, si elle devait se généraliser, accroîtrait la sensibilité du secteur bancaire aux changements de l'environnement macroéconomique ou boursier.

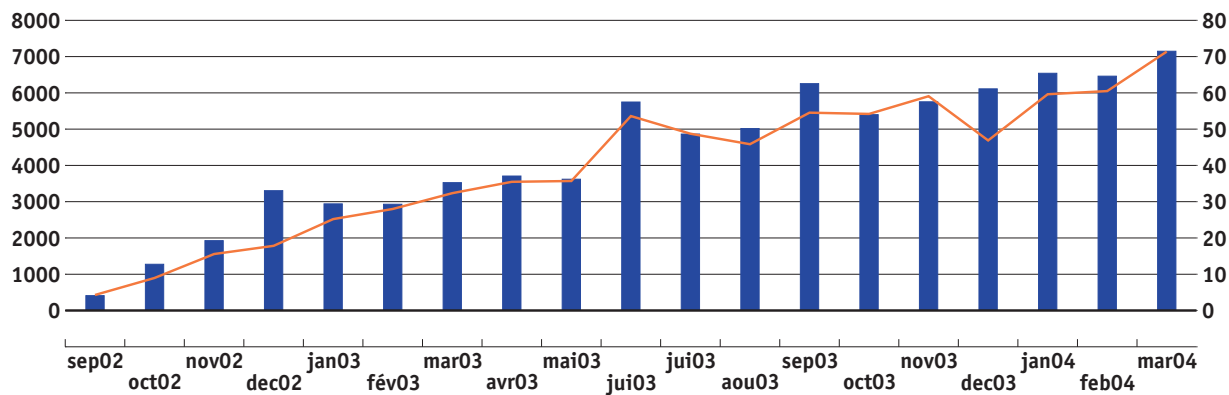
Infrastructure des marchés financiers

Dans le domaine de la compensation et du règlement des paiements et des opérations sur titres et autres instruments financiers, la place financière suisse dispose d'une infrastructure qui fonctionne bien et qui, sous l'angle de la sécurité et de l'efficacité, occupe une position de choix en comparaison internationale. Reliés entre eux dans ce qu'on appelle la «swiss value chain», les systèmes de paiement et de règlement des opérations sur titres revêtent une importance particulière pour ce qui a trait à la stabilité du système financier suisse. Il s'agit surtout du Swiss Interbank Clearing (SIC), pour les paiements, et du SECOM, pour le règlement des opérations sur titres. Depuis des années, ces systèmes ont fait leurs preuves et contribuent, par leur architecture, à minimiser les risques de règlement. Grâce au fait qu'ils sont raccordés entre eux, il est possible notamment d'assurer en temps réel le règlement des opérations sur titres selon le principe livraison contre paiement.

Au sein de la «swiss value chain», la SIS x-clear est l'élément le plus récent. Depuis mai 2003, elle joue le rôle de contrepartie centrale pour les participants à la plate-forme de négoce électronique virt-x. La présence d'une contrepartie centrale apporte plusieurs avantages aux participants, notamment celui d'éliminer les risques vis-à-vis de chacune des contreparties avec lesquelles des opérations ont été conclues. Mais les risques se concentrent sur la contrepartie centrale, d'où l'importance décisive de la gestion des risques chez cette contrepartie centrale. A la SIS x-clear, la gestion des risques repose sur plusieurs instruments et est assurée d'une manière relativement conservatrice, de sorte que l'introduction de ce système est globalement à saluer sous l'angle de la stabilité du système financier. De même, le système mondial de paiement multidevise Continuous Linked Settlement (CLS), qui permet un règlement des opérations de change selon le principe paiement contre paiement, fournit une contribution positive à la stabilité du système financier. Les opérations de change réglées par le système CLS ont augmenté rapidement depuis le mois de septembre 2002, soit depuis que ce système est en exploitation (voir graphique 6). Ainsi, les risques inhérents au règlement traditionnel des opérations de change ont pu être sensiblement réduits.

échelle de gauche: — Nombre de transactions exécutées (moyenne mensuelle)

échelle de droite: ■ Valeur des transactions exécutées, en milliards de CHF (moyenne mensuelle)



Source: Banque CLS

Introduction

This report highlights the main trends in the Swiss financial system with a view to their impact on stability. It is the second annual financial stability report published by the Swiss National Bank (SNB).⁵ The report provides an evaluation of the stability of the system and contains a synthesis of information and indicators. It thereby helps the SNB to draw attention to tensions or imbalances that could jeopardise the stability of the system. It should be noted that this report does not aim to analyse the solvency of individual financial institutions.

A stable financial system can be defined as a system where the various components fulfil their functions and prove resistant to shocks. This report focuses on two vital elements in the system: the *banking sector* and the *financial market infrastructure*.

Overall Assessment

Banking Sector

The analysis of the stability of the banking sector is divided into two steps. Firstly, we analyse the development of risk factors related to the general economic and financial environment that can affect the stability of the Swiss banking sector. Secondly, we evaluate the sensitivity of the banking sector to these risk factors and its ability to withstand shocks. This assessment is based on measures of risk-taking, profitability, and the capital adequacy of the banking sector. To complete our analysis, we also use indicators provided by models quantifying the stress to which the banking sector is exposed and its links to the macroeconomic environment.

In 2003, the Swiss banking sector operated in a mixed – albeit better than in the previous year – environment. While economic growth was pronounced in the United States (USA) it remained weak and in some cases negative in the European Union (EU) and in Switzerland. The available indicators suggest that this situation only had a modest impact on the quality of borrowers. Despite a rise in the number of bankruptcies in Switzerland, risk premiums on large Swiss and international corporate debt decreased. In parallel with this, the stock markets registered a net improvement, despite continued volatility.

In this mixed environment, the Swiss banking sector reported a strong rise in profits. The magnitude of the improvement, which varied from one bank to another, was mainly due to the fact that two

major banks – Credit Suisse Group (CSG) and Banque Cantonale Vaudoise (BCV) – moved back into profit after making a loss in 2002. Moreover, the improvement in profitability came from a reduction in costs (provisioning and operating expenses). Revenues (the net income from interest, commission and trading activities) remained unchanged or even declined. The reduction in provisions in the banking sector contrasts with the relatively unfavourable economic situation and, to a lesser extent, the development of the quality of borrowers. This can be explained chiefly by the banks' relatively prudent lending policy. At the same time, the stagnating revenues from securities operations contrasted with the stock market rally. This in turn can be ascribed to a lower volume of transactions accompanied by increasing competitive pressure on commission fees.

The increase in profits has led to a significant improvement in the capital base in the banking sector and thus in its ability to absorb shocks. At the end of 2003, excess capital – relative to the regulatory minimum – was above its historical average. Moreover, the capital base of the Swiss big banks – based on risk-weighted capital requirements as defined by the Basel Accord – was well above the international average. By contrast, their capital base measured using the unweighted capital ratio – which is not subject to a minimum requirement in Switzerland – was below the international average. This can be explained partly by the fact that the big Swiss banks have a high proportion of assets with a low risk weighting (collateralised loans and interbank loans, for example).

The impression of robustness derived from profits and the banks' capital base is corroborated by indicators reflecting financial market valuations. Judged by yield spreads and agency ratings, the Swiss banking sector appears robust by both historical and international standards.

The stability of the banking sector can be analysed using a range of variables which, taken on their own, sometimes provide conflicting information. In order to aggregate this information, the SNB has developed a stress index bringing together a number of symptoms of stress.⁶ The index reflects in particular the evolution of capital, profits, share prices and the risk premium on Swiss banks' debt. In 2003 this index was well below its historical average, confirming the impression that the Swiss banking sector is in sound shape.

⁵ For the 2003 edition, see the "Report on the Stability of the Financial System", SNB, Quarterly Bulletin, 2, June 2003, pp. 60–85, available at www.snb.ch.

⁶ For a detailed description of this indicator, see Section 6 and Chart 22.

Regarding future developments, we do not feel that general economic and financial market conditions represent a major threat to the stability of the Swiss banking system. In fact, the forecast for 2004 indicates a return to economic growth in Switzerland and in the EU, along with a continued upswing in the USA. Moreover, the rise in real estate prices in Switzerland has remained moderate by historical and international standards. There therefore seems little likelihood of a sharp downward correction on this market, which traditionally constitutes a major stress factor for the banking sector. Finally, the available indicators suggest that on an international view the main banking sectors are also relatively robust. Hence, there is little risk of contagion effects causing a crisis in Switzerland.

Nevertheless, two potential sources of stress should be mentioned. Firstly, an economic slowdown – a scenario that is unlikely but cannot be ruled out – could have a negative impact on bank loan portfolio quality and stock market prices. Secondly, in the more probable scenario of a sustained economic recovery, a stronger than anticipated hike in interest rates could also reduce the quality of loan portfolios by increasing the burden of debt on households and the corporate sector. Our scenario analysis indicates that the Swiss banking sector's capital base is sufficient to withstand both a substantial deterioration in economic and stock market conditions and a sharp rise in interest rates. We note, however, that several banks, especially some large institutions, have announced their intention of increasing their risk profile. Evidently, a general increase in risk-taking would increase the sector's sensitivity to changes in economic and stock market conditions.

Financial Market Infrastructure

With regard to the clearing and settlement of payments and transactions involving securities and other financial instruments, Switzerland has a well-functioning infrastructure, and safety and efficiency are very high by international standards. Of particular significance for the stability of the Swiss financial system are the payment and securities clearing and settlement systems, which are linked within the Swiss value chain. These include principally the payment system Swiss Interbank Clearing (SIC) and the securities settlement system SECOM. Both are well-established systems whose architectures minimise settlement risks. The link between the two systems permits real-time settlement of securities transactions on the principle of delivery versus payment.

The latest element within the Swiss value chain is SIS x-clear, which was introduced in May 2003 as a central counterparty for institutions using the electronic trading platform virt-x. The introduction of a central counterparty has a number of advantages for market participants. First and foremost, it eliminates individual counterparty risks. However, since at the same time this also leads to cluster risks at the central counterparty, risk management is vital. SIS x-clear's risk management system comprises a number of instruments and is relatively conservative. Overall, the introduction of this system should therefore be welcomed from the viewpoint of the stability of the financial system. Continuous Linked Settlement (CLS), a global multi-currency payment system that allows the settlement of foreign exchange transactions on the principle of payment versus payment, also makes a positive contribution to the stability of the financial system. Thanks to the rapid rise in the volume of foreign exchange transactions settled through CLS since it started operating in September 2002, the risks inherent in conventional settlement of such transactions have been reduced considerably.

Data and data sources

Unless otherwise stated, all data used in this report come from internal statistics prepared by the SNB and the Swiss Federal Banking Commission (SFBC). The banking statistics are based on official data submitted by the individual banks. The data on the big banks are analysed on a consolidated basis. For the other banks, an individual (non consolidated) view is used. The underlying accounting framework for the banks is defined in the accounting regulations set out in the Banking Ordinance (Art. 23–28 Banking Ordinance). The SFBC has issued a series of supplementary accounting guidelines (BAG-SFBC) which incorporate Swiss GAAP. The banks are also permitted to use internationally accepted accounting standards (for example US GAAP), but only to prepare their consolidated financial statements and in certain other special cases.

The figures presented can vary strongly according to the accounting standards used. For example, if Credit Suisse Group (CSG) had prepared its annual financial statements on the basis of US GAAP (rather than Swiss GAAP), the aggregate net profit of the Swiss banks in 2003 would have been about CHF 4 bn lower. However, this report does not take account of the impact that changes in accounting standards planned for 2004 would have had on the results published for 2003.

This document is based on the data available as at 15 May 2004.

Part I: Banking Sector

1 General conditions

The analysis of the economic and financial environment is based on economic activity, interest rates, the credit standing of borrowers in general and of major foreign banks and insurance companies in particular, the real estate market and the stock market. These risk factors have been singled out on the basis of an analysis of the sensitivity of the banking sector to a range of economic variables and information on its exposure to specific sectors of the economy. This analysis indicates that during 2003 the Swiss banking sector operated in a mixed environment but that the outlook for 2004 is more favourable.

Ongoing weakness of economic activity

Economic activity in Switzerland was weak in 2003. The downtrend in annual GDP growth rates, which started in 2000, continued and GDP contracted (-0.5%) for the first time since 1993. The downtrend in the European Monetary Union (EMU) also continued, with GDP growth dropping steadily from 3.5% in 2000 to 0.4% in 2003 (see Chart 1). By contrast, the USA and above all Japan reported higher GDP growth than in the previous year. In the USA, the growth rate increased from 2.2% in 2002 to 3.1% in 2003. In Japan, GDP grew by 2.7% in 2003, compared with a decline of 0.4% in 2002.

Low short-term interest rates

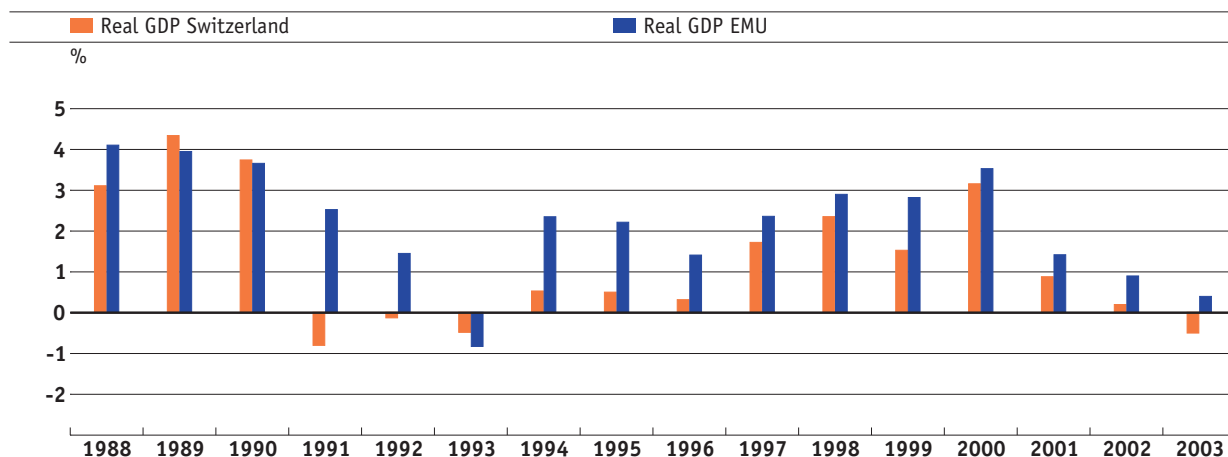
In Switzerland, short-term interest rates (three-month LIBOR) declined further from their historical low, dropping from 0.62% in January to 0.26% in December (see Chart 2). However, long-term rates rose over the year. The average yield on ten (five) year Confederation bonds rose from 2.4% (1.5%) in January to 2.8% (2.0%) in December. Similar trends were observed in the USA and Japan. Short-term Euro rates also declined but there was no rise in yields on government bonds.⁷

Credit standing of borrowers was mixed

The evidence regarding the credit standing of borrowers was mixed. The yield spread between corporate and government bonds indicates that the credit standing of domestic and foreign borrowers increased significantly over the year. The yield spread declined by 93 basis points (bp) in the USA, 33 in the EMU and 68 in Switzerland. That is equivalent to a decline of 44, 34 and 53% respectively (see Chart 3).⁸ By contrast, changes in credit ratings indicate a deterioration in the situation. The number of downgrades was well above the number of upgrades over the year.⁹ This negative trend is confirmed by the number of bankruptcies in Switzerland. There was a renewed rise in the bankruptcy rate to 2.1% in 2003. However, this was still slightly below the average for the past ten years (2.3%). As in previous years, the rise in the bankruptcy rate was due to an above-average rise in the number of companies filing for bankruptcy. By contrast, losses from settled bankruptcies were 3.7% lower than in the previous year (see Chart 4).¹⁰

Growth in GDP

Chart 1



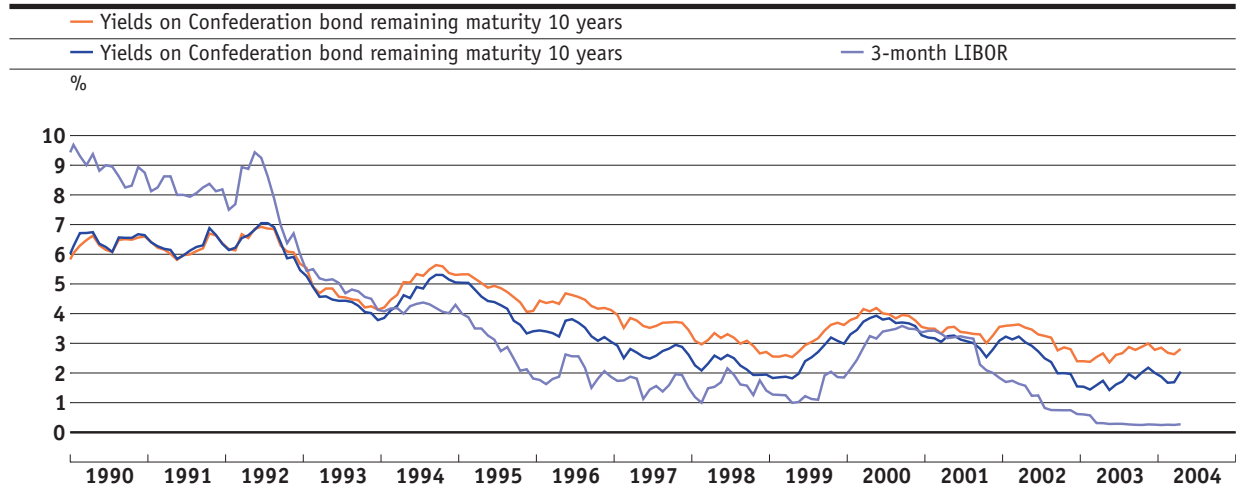
Sources: SNB; SFBC; EU Commission

7 Source: Reuters.

8 Source: Thomson Financial Datastream.

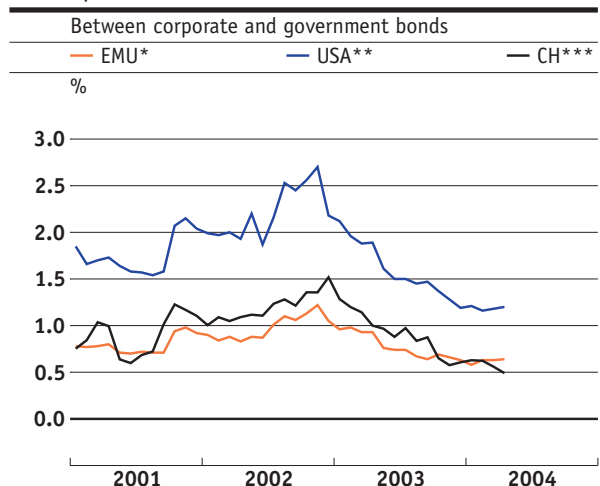
9 Source: Moody's Investors Services.

10 Source: Federal Statistics Office, State Secretariat for Economic Affairs



Yield spreads

Chart 3



* 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 corporate bonds with a rating of at least BBB- and on Confederation bonds, calculated by SNB

Bankruptcy rate in Switzerland

Chart 4

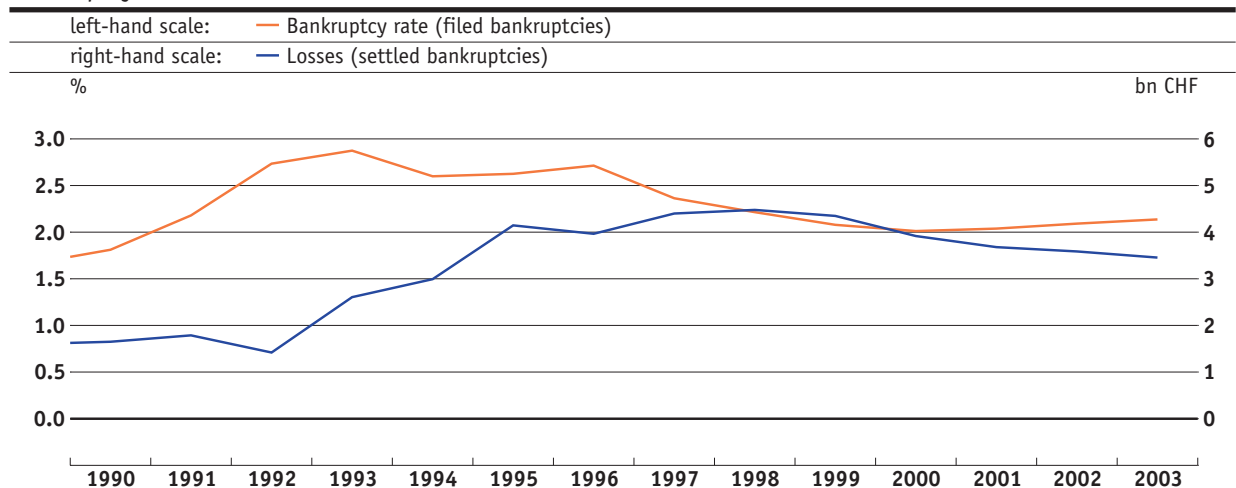


Chart 2: Sources: SNB; Reuters

Chart 3: Sources: SNB; SFBC; Datastream

Chart 4: Sources: Federal Office for Statistics, State Secretariat for Economic Affairs

Robustness of major foreign banks; major insurance companies back in profit

The major foreign banks reported higher profits in 2003. This was attributable to favourable stock market trends, a reduction in risk premiums for large-scale borrowers, the good shape of the retail banking sector and cost-cutting drives. The financial services conglomerates also benefited from the fact that their insurance subsidiaries returned to profit. Looking at capital adequacy, most major international banks reported an improvement in their capital ratio. The credit ratings of the big banks remained relatively stable, but the outlook was generally upgraded.¹¹ Moreover, there was a clear decline in the premiums on credit default swaps (CDS) for bank debt (see Chart 5). It should be noted, however, that despite a net improvement in 2003, profits and capital adequacy in the German and Japanese banking sectors were still below the international average. In particular, the credit agencies' ratings for the big German and Japanese banks are very low by international standards.¹²

Having sustained substantial losses in 2002, the major international insurance companies posted a positive global performance in 2003. This improvement was principally due to the stock market rally, the reduction in risk premiums for major borrowers, a renewed decline in insured incidents and – in some segments – an increase in premiums. Several insurance companies utilised the improvement in stock market conditions to raise their capital. Overall, though, the capitalisation of the insurance sector remains low in historical terms. Even though the CDS premiums for the insurance sector declined considerably in 2003, the credit rating of insurance companies continued to deteriorate.

Modest rise in real estate prices

Swiss real estate prices rose 2.3%¹³ in 2003 (see Chart 6). Growth was thus lower than in 2002 (3.9%). Although growth rates were well above the ten-year average (–0.5%), they still appear modest compared with the 1980s. Moreover, at year-end 2003 real estate prices were still well below the peak recorded in 1989. Consequently, there is no reason to assume that there is a real estate bubble like that seen in the late 1980s.

This contrasts with the situation in many other countries, especially the USA, UK and Australia, where property prices rose by 8, 10 and 18% respectively in 2003.¹⁴ However, there were some regional differences in Switzerland in 2003. Growth in real es-

tate prices around Lake Geneva and in western and southern Switzerland was well above the average for the country as a whole. This could possibly point to regional overheating.

Equity market rally

The global equity markets rallied strongly in 2003. In Switzerland the SPI rose 716 points (+22%) over the year to 3962. There was also a turnaround in volatility, which decreased by 24% compared with year-end 2002 (see Chart 7). Nevertheless, volatility was still well above the long-term average. The foreign stock market indices registered a similar trend. The US market (S&P 500) rose 26% over the year while European market prices (DJ STOXX 50) gained 10% and the Japanese index (Nikkei 225) increased 24%.¹⁵ The equity markets in the USA and Japan thus made up for the negative trend in previous years in terms of percentage points. By contrast, the markets in Switzerland and especially the EU did not rise as much in 2003 as they declined in 2002.

Outlook

The overall economic and financial outlook for 2004 seems favourable. Above all, the forecasts for 2004 indicate a return to growth in Switzerland and in the EU, along with a continued upswing in the USA. The SNB is forecasting GDP growth of 1.5–2% in Switzerland this year, while the forecast is 4.7% for the USA, 1.9% for the EU and 3.6% for Japan. Secondly, the rise in real estate prices in Switzerland looks set to remain modest both internationally and by historical standards. There therefore seems little likelihood of a sharp downward correction on this market. Thirdly, the available indicators suggest that on an international view the main banking sectors are also relatively robust. Hence, there is little risk of contagion effects causing a crisis in Switzerland.

Nevertheless, uncertainty remains relatively high at present. A slowdown in economic growth, accompanied by a marked drop in stock market prices, cannot be ruled out. Besides, the most probable scenario – a sustained economic recovery – is likely to result in a hike in interest rates. If the rise were to prove stronger than anticipated, this could increase the debt burden on households and on the corporate sector, leading to a deterioration in the quality of borrowers.

11 Source: Moody's Investors Services.

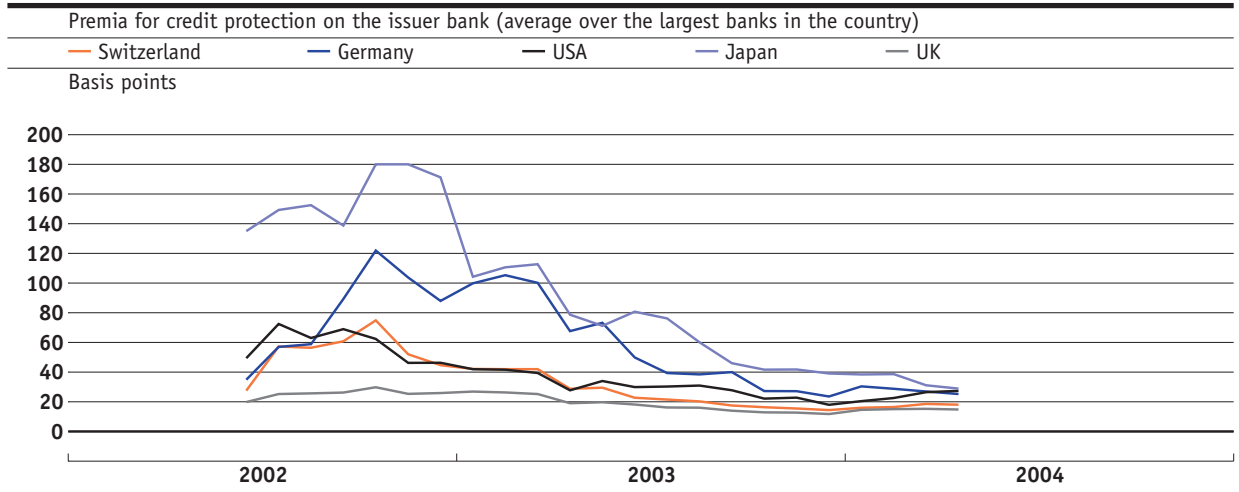
12 Source: Moody's Investors Services. Financial strength ratings exclude consideration of government support.

13 Source: Wüest & Partner.

14 Source: Bank for International Settlements (BIS).

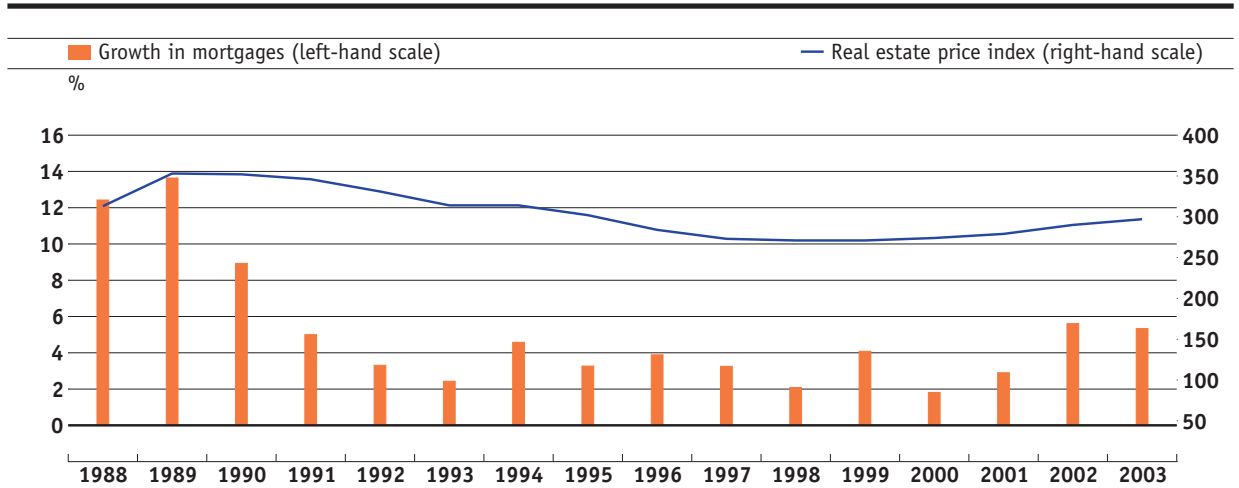
Numbers are year on year growth rates for the 3rd quarter of 2003.

15 Source: Thomson Financial Datastream.



Mortgages and real estate prices

Chart 6



Development of the Swiss Performance Index (SPI)

Chart 7

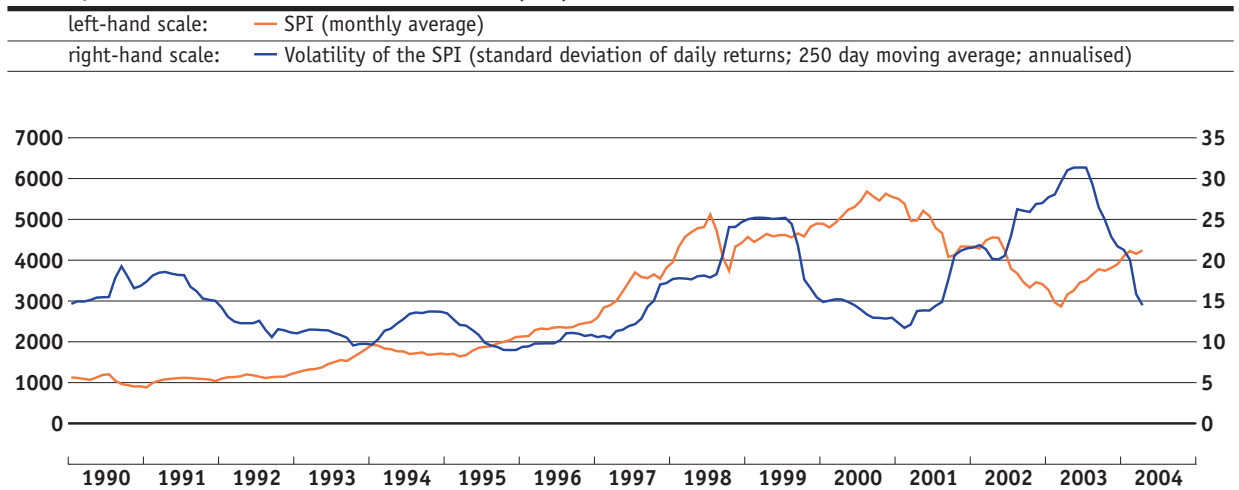


Chart 5: Source: Bloomberg

Chart 6: Sources: SNB; SFBC; Wüest&Partner

Chart 7: Sources: SNB; SFBC

2 Profits

A historical comparison indicates that the profitability of the Swiss banking sector was above-average in 2003. Since the cost-efficiency of the banking sector is essentially improving and operating conditions should pick up, the profit outlook for 2004 is good.

Substantial improvement in profits

The Swiss banking sector generated a profit of CHF 17.3 bn in 2003. The return on assets (ROA)¹⁶ was 57 bp, above the long-term average (1987–2003) of 43 bp. The situation was far better than in 2002. Firstly, aggregate net profit more than quintupled. Secondly, there was a marked reduction in the number and size of the banks reporting a loss. In 2003, 35 banks, accounting for less than 1% of total assets in the banking sector, made a loss, compared with 52 (31% of total assets) in 2002 (see Chart 8).

Gross profit in the Swiss banking sector rose by 39% to CHF 30.1 bn. This was mainly due to a sharp cost reduction, which declined by a total of 10% to CHF 54.6 bn, the lowest level since 1999. Total revenues remained relatively stable at CHF 84.7 bn (+3%).¹⁷ However, the various components developed differently. Despite the recovery on the financial markets, commission income contracted by 9% to CHF 40.7 bn. This was due to lower transaction volumes and increasing competition in the private banking sector. Trading income also declined (–4% to CHF 9.2 bn). By contrast, net interest income in the Swiss banking sector climbed 4% to CHF 30.7 bn. Since net interest income from the banking book remained stable, this mainly reflects rising interest income from the trading portfolio.

Alongside lower costs, the clear rise in profits in the Swiss banking sector was mainly due to the massive reduction in write-downs, provisions and losses (–64% to CHF 3.1 bn). This principally reflects the normalisation of the situation at individual large banks (especially CSG and BCV), whose losses, which were partly due to one-off factors, had a major impact on the aggregate figures for 2002. Even without this, write-downs would still have been 24% lower (see Chart 9).

Profits rose at most categories of banks, but the extent of the improvement varied (see Chart 10). If profit is measured in relation to assets, the rise was particularly marked at the big banks (+52 bp to 53 bp), the cantonal banks (+50 bp to 39 bp) and the trading and stock exchange banks (+68 bp to

132 bp). Conversely, the change in profitability was negligible at the regional banks (+8 bp to 45 bp) and the Raiffeisen banks (–2 bp to 44 bp).

The increase in operating profit was due to different factors at different categories of banks. Banks with a strong bias towards capital market operations, especially the big banks and trading and stock market banks, reported virtually unchanged revenues despite the recovery of the financial markets. The improvement in gross profits at these banks was entirely due to cost reductions. At the big banks, operating expenses declined by 13% to CHF 38.9 bn. This offset the decline in commission and trading income (–13% and –14% respectively). By contrast, net interest income increased by 6%. At CSG, the improvement in consolidated earnings was also due to the fact that the insurance operations were back in profit. The cantonal banks registered a rise in trading profit (+11%) and commission income (+48%). By contrast, net interest income remained virtually unchanged (–2%). Costs remained stable at the cantonal banks, while regional and Raiffeisen banks increased income from their core operations. Net interest income rose 3% and 8% respectively. However, both categories had to contend with higher administrative expenses (+6% and +3% respectively).

Write-downs, provisions and losses declined at most categories of banks. The decline was particularly marked at the big banks (–77%) and cantonal banks (–70%) due to the one-off effects mentioned above. The Raiffeisen banks (+124%) were an exception; even so, write-downs as a proportion of total lending remained low for this bank category.

Outlook

The outlook for profits in the Swiss banking sector in 2004 is by and large good. Firstly, general conditions should be better than in 2003. Secondly, overcapacity has been scaled back somewhat in recent years. This has improved the cost-efficiency of the Swiss banking sector as a whole and the big banks in particular. Even if revenues were to stagnate, profits are likely to be relatively high. However, smaller banks still have scope to raise efficiency through cooperation projects or mergers. The launch of Clientis, an association of regional banks, is a step in this direction. At the same time, there has been some increase in the banks' appetite for risk.¹⁸ Consequently, a relatively significant drop in profits is likely if operating conditions deteriorate.

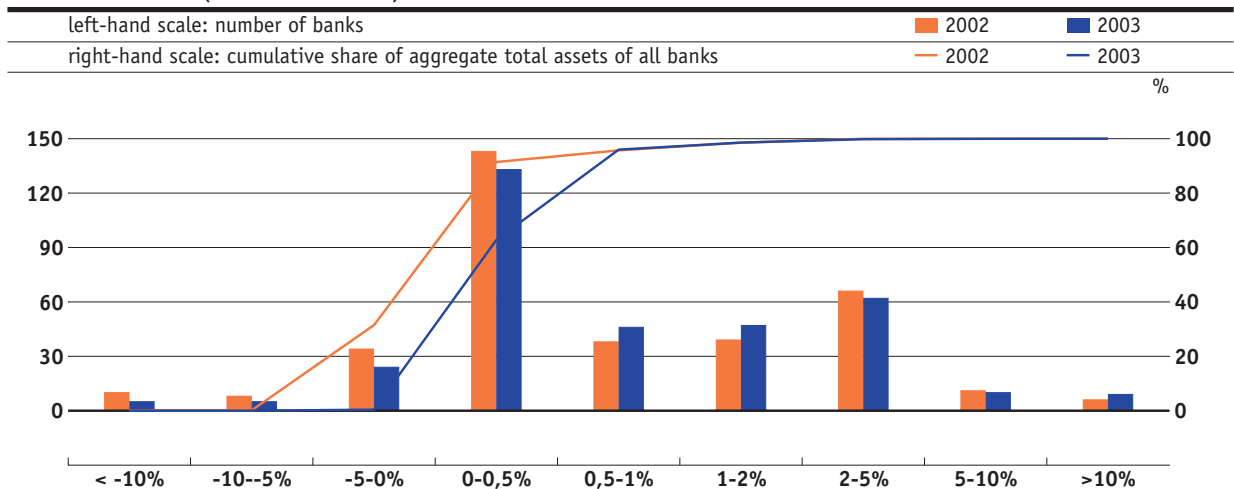
16 Net profit as a percentage of assets.

17 Looking at banking business alone (without CSG's insurance business), total revenues would have remained unchanged at the 2002 level.

18 See Section 3.

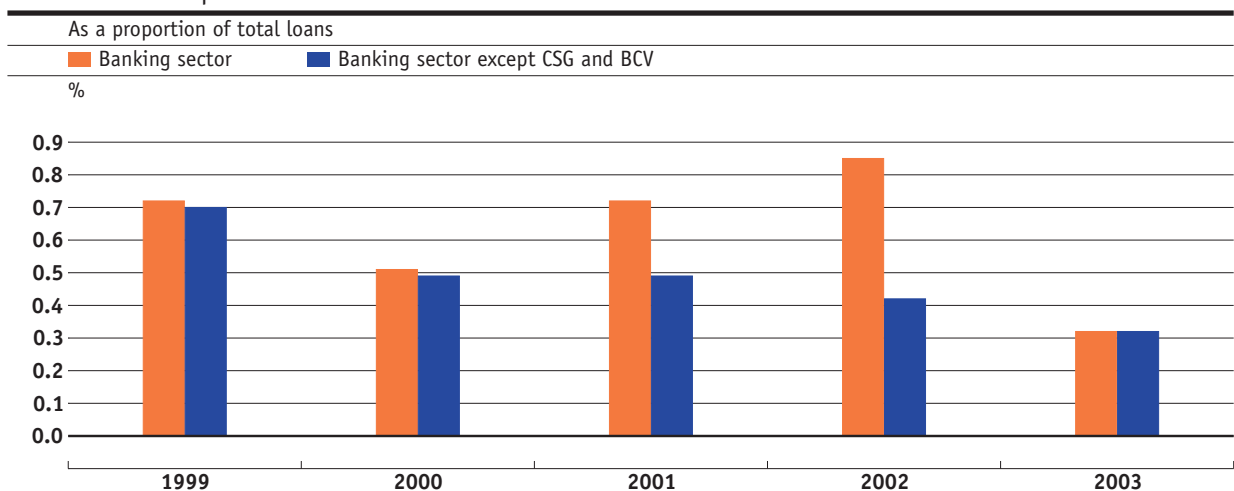
Return on assets (individual banks)

Chart 8



Write-downs and provisions for default risks

Chart 9



Return on assets (by bank categories)

Chart 10

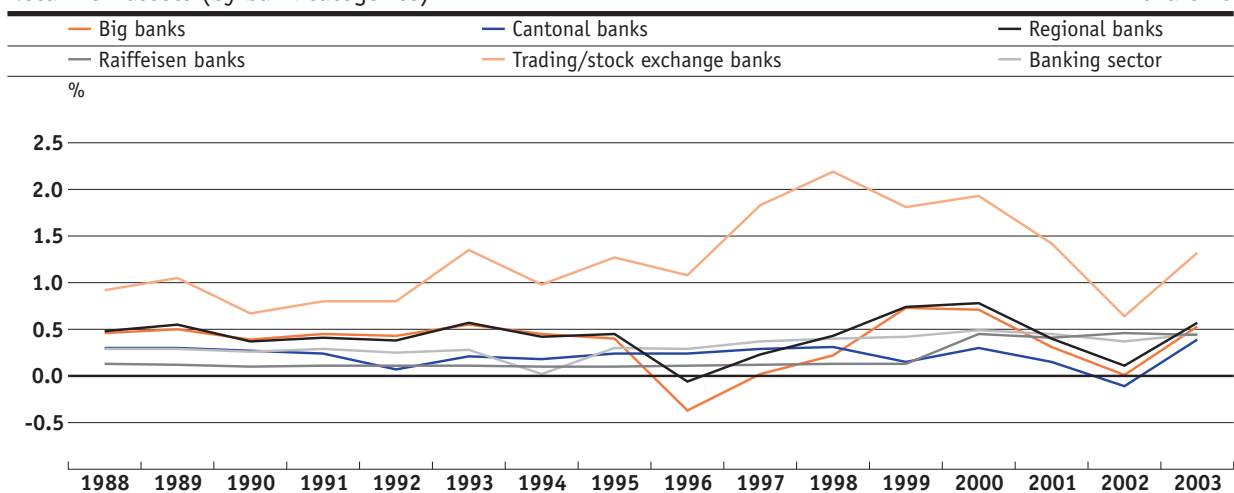


Chart 8: Sources: SNB; SFBC

Example to assist interpretation of Chart 8:

In 2002 approx. 140 banks generated a return on assets of between 0% and 0.5% (red bar). The banks with a return on assets of less than 0.5% together accounted for 85% of the aggregate total assets of all banks in 2002 (red line).

Chart 9 and 10: Sources: SNB; SFBC

3 Risks

In terms of the proportion of non-performing loans and the level of write-downs and provisions, the credit risk of Swiss banks declined significantly compared with 2002, being at a low level. Interest-rate and market risks remained low, increasing only slightly compared with 2002. Overall, total risk in the banking sector declined last year. For 2004 there is a risk that a sharp rise in interest rates could lift the credit risk again by increasing the interest burden on borrowers.

Lower credit risk

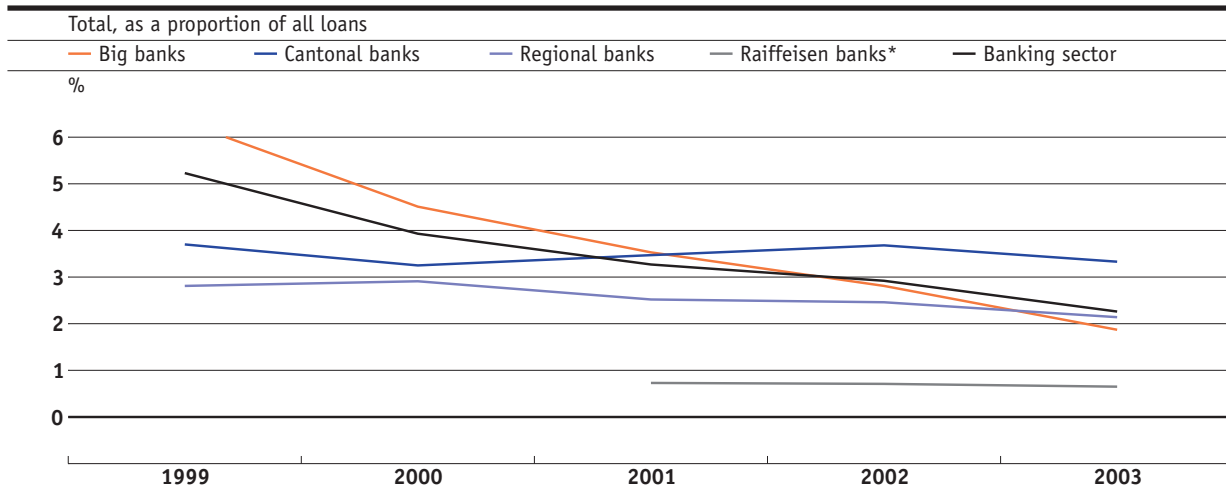
Credit risk measures the risk of default by a counterparty, in other words, the risk that a counter-

party will fail to make the agreed interest and repayment instalments in full. Write-downs and provisions can be taken as an indicator of credit risk because they reflect the banks' assessment of the average quality (credit profile) of the loan portfolios.

Write-downs and provisions for default risks, as a percentage of total lending, declined from 2.9% at year-end 2002 to 2.3% at year-end 2003. At the same time, non-performing loans, as a percentage of total lending, declined from 2.9% to 2.1%.¹⁹ This indicates that overall the average quality of the loan portfolio improved between year-end 2002 and year-end 2003. Write-downs and provisions for default risks and non-performing loans vary between approximately 0.5% and 3.5% of total lending, depending on the category of bank (see Charts 11 and 12).

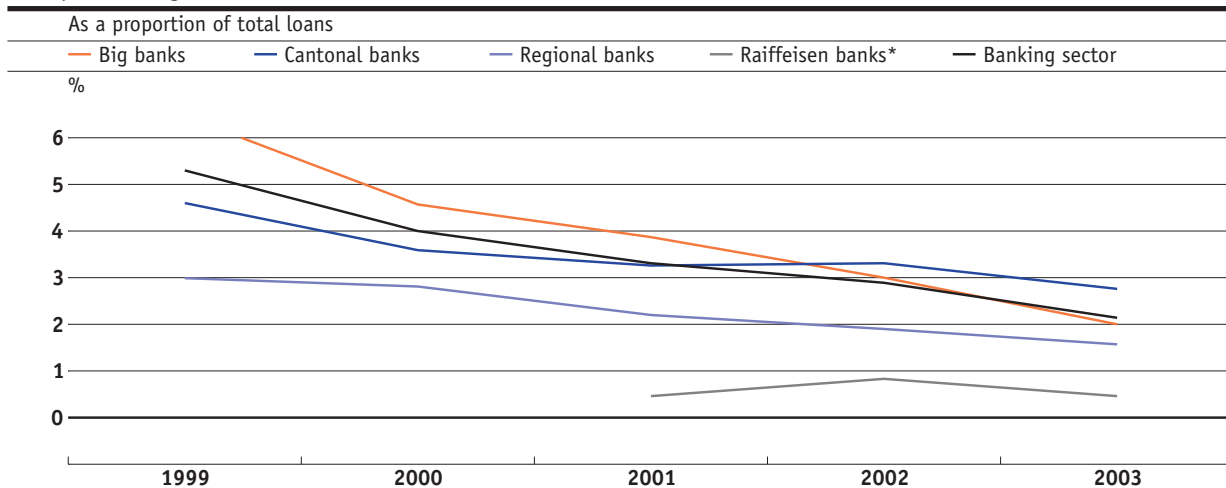
Write-downs and provisions for default risks

Chart 11



Non-performing loans

Chart 12



Charts 11 and 12: Sources: SNB; SFBC

* Statistics for the Raiffeisen banks only available from 2001.

¹⁹ Non-performing loans are customer claims and mortgage loans where interest payments are at risk or are no longer expected to be made. A loan is considered to be non-performing if payments (including interest payments) related to this loan are more than 90 days overdue.

There was also a significant decline in *new* provisions and write-downs as a proportion of total lending volume in 2003 compared with 2002. The aggregate write-down for the entire sector was 0.32% (2002: 0.85%). The new write-down and provisioning were thus below the average for the previous seven years (0.77%). Looking at the split by categories of banks, new write-downs and provisions were 0.23% of total lending at the cantonal banks, 0.24% at the big banks, 0.25% at regional banks and 0.19% at the Raiffeisen banks.

In view of the comparatively difficult operating conditions, the below-average credit risk provisioning in the Swiss banking sector seems surprising. Indeed, the available indicators paint a contradictory picture. On the one hand, the decline in Swiss GDP, the fact that rating downgrades exceeded rating upgrades and the rise in bankruptcies suggest that the quality of loans might have deteriorated. At the same time, the low spreads and rising share prices suggest a positive assessment of borrowers' credit standing and the future prospects for companies.²⁰

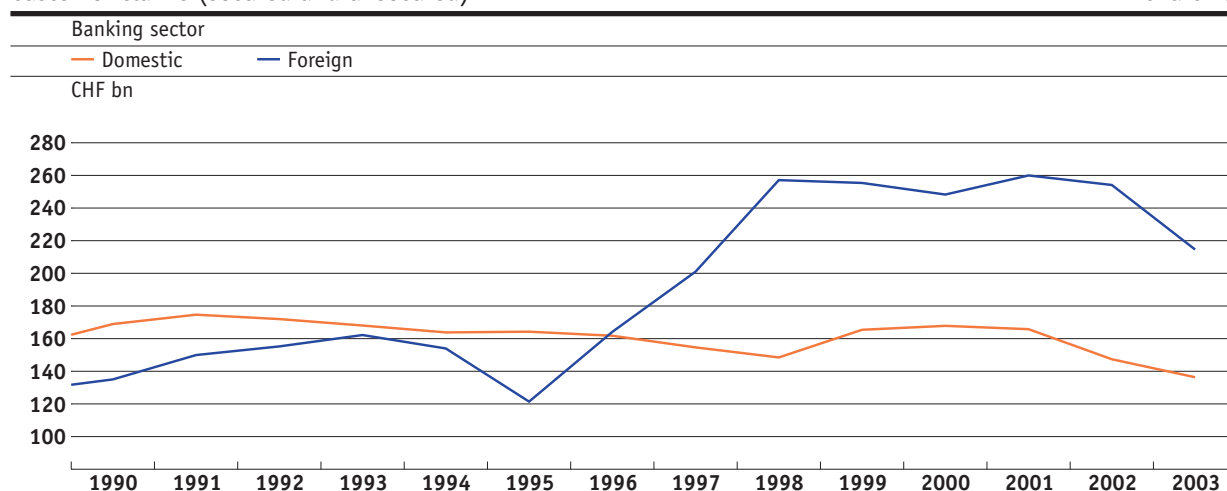
Looking at the data for individual banks shows that the main reason for the sharp decline in aggregate credit risk was the elimination of one-off factors at CSG and BCV. As Chart 9 shows, the decline in new risk provisioning was chiefly due to the improvement at these two banks.²¹ However, the credit risk in the banking sector also declined without these one-off factors. On the one hand, persistently low interest rates have ensured that the interest burden on borrowers remains low, so their solvency remains high. On the other hand, the decline in credit risk is also due to efforts made in recent years to raise the qual-

ity of loan books. By streamlining lending portfolios and improving the quality of loans (e.g. by demanding higher collateral) the Swiss banks have managed to reduce the proportion of non-performing loans. For instance, the proportion of collateralised loans increased further in 2003 and is now 82% (year-end 2002: 75%).

Nevertheless, the situation could deteriorate in the future. If there is a sharp rise in interest rates, some borrowers could become insolvent. Estimates based on our scenario analyses (see Box 1, p. 28) suggest that a 200 bp rise in short-term and long-term interest rates could reduce profits in the banking sector by a third. While this overall effect also comprises the direct risk related to an interest rate increase (see the next two sections), the main reason for a decline in profits would be higher provisioning and write-down requirements resulting from the rise in rates, in other words an *indirect interest rate risk*. When interpreting the potential impact of a rise in interest rates, it should be remembered that the estimates contain a number of uncertainties. On the one hand, the impact could be overestimated because structural changes (e.g. the banks' more conservative lending policy mentioned above) are not fully factored into the model. Moreover, if the rise in interest rates is linked with an increase in GDP, higher incomes of borrowers at least partly offset their higher interest burden. This reduces the negative impact of a rate rise on credit risk. On the other hand, there is also a possibility that the impact of a rate rise could be underestimated. The period over which the parameters of the model were estimated does not include any periods when rates were as low as they are at present. Conse-

Customer claims (secured and unsecured)

Chart 13



20 See Section 1.
21 See Section 2.

Chart 13: Sources: SNB; SFBC

quently, it cannot be ruled out that in the present situation the impact of a rise in rates would be higher than indicated by the model which was estimated using higher levels of interest rates.

A long-term view taking economic activity into account shows that the volume of lending has remained within reasonable limits in recent years. Between 1993 and 2003, total mortgage loans rose by an average of 3.7%, whereas Swiss real estate prices declined by an average of 0.6% p.a. over the same period. Consequently, there is no sign of a speculative real estate bubble accompanied by high growth in mortgages, as there was in the late eighties (see Chart 6). Moreover, there has been a general reduction in total customer claims in recent years. At year-end 2003, both domestic and foreign claims were lower than at year-end 1998. Foreign claims declined 17% in this period. That was far higher than the reduction in domestic claims (-8%; see Chart 13). 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.²² Accordingly, neither mortgages nor customer claims seem to show any structural imbalances that would reflect a divergence between the development of the lending activity and the economic fundamentals. This assessment is confirmed by an analysis of our stress index (see Box 3, p. 37), which does not currently identify any general economic imbalances in lending or real estate prices. However, it should be stressed that these statements refer to the overall banking sector and the whole of Switzerland. Problems at individual banks or local imbalances cannot be ruled out. As already mentioned,²³ real estate prices and growth in mortgages around Lake Geneva and in western and southern Switzerland was clearly above the national average and could thus possibly indicate some regional overheating.

22 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.

23 See Section 1.

Box 1: Scenario Analysis²⁴

The scenario analysis described in this box uses microeconomic methods and a set of macroeconomic and individual bank variables to reveal systematic relations between the macroeconomic environment and profitability in the Swiss banking sector. The objective of the analysis is threefold: (i) to identify macroeconomic factors which are systematically linked to the profitability of the banking sector; (ii) to simulate the present and future profitability of the banking sector on the basis of these variables; (iii) to provide an additional instrument to assess the resilience of the Swiss banking sector.

The scenario analysis involves two steps. In the first step, three essential components of bank earnings – net interest income, provisions, and net earnings from trading and commissions – are regressed on a set of macroeconomic variables and individual bank characteristics in a panel regression. The set of macro variables includes short- and long-term interest rates, real GDP growth, real estate prices, the bankruptcy rate in the Swiss corporate sector, and the return on the Swiss stock market. The parameters obtained from the regression, which are estimated over the 1987–2002 period, reflect the sensitivity of the banking sector's earning components to changes in the macroeconomic environment. Those parameters which are statistically significant are then used, in the second step, to simulate the banking sector's profitability under four macroeconomic scenarios. Firstly, an interest rate scenario characterised by an increase of the short- and long-term nominal interest rate by 200 bp to a level of 300 bp. Secondly, a recession scenario characterised by negative GDP growth (–1%), a relatively high rate of corporate bankruptcies (3%) as well as a decline in real estate prices (–6%). Thirdly, a stock market scenario where the SPI is assumed to decrease by 20%. And, finally, a scenario which combines the shocks specified under scenarios 1 to 3. The size of the shocks used in each scenario is in line with the extreme variations observed during the period considered for the estimation.

Based on the first-step regression analysis it appears, firstly, that net interest income is rather insensitive to macroeconomic developments. The expected negative relation between interest rate changes and the interest margin is supported by the data; however, it is weak and appears to have reversed in recent years. These results are consistent with the evidence from banks' reporting on their direct interest rate risk (see section 3). Secondly, there is a positive relation between bank provisions and interest rates and the rate of corporate bankruptcies on the one hand and a negative relation between interest rates and GDP growth and real estate prices on the other hand. Finally, the results show that there is a positive correlation between stock market prices and trading and commission income and a negative correlation between stock market prices and interest rates.

The results from the second-step simulation are reported in Table 1 below. Table 1 contains two elements. Firstly, the profit for the banking sector measured as a percentage of the level of excess capital for each scenario. Secondly, the difference with respect to the baseline scenario which roughly represents the status quo. For example, according to the second scenario – which implies a 200 bp interest rate increase – the profit of the banking sector would amount to 16% of excess capital. Compared to the baseline scenario, this implies a decrease of profit representing 8% of excess capital.

As can be seen from Table 1, the resilience of the Swiss banking sector to potential macroeconomic shocks appears to be relatively high. For instance, an interest rate shock would lead to a decrease in profitability, through its impact on net interest income, provisions and the value of the bond portfolio. Under such a scenario, however, the banking sector would still be profitable. Similarly, the recession scenario would entail substantially higher provisions and hence reduced profits without, however, affecting the banking sector's capitalisation. In comparison, the consequences of a stock market crash would be relatively severe. Under this scenario, the banking sector as a whole would experience losses. However, a stock market crash does not by itself constitute a serious threat to the banking sector, as the losses entailed are small when compared to the size of the sector's excess capital. Finally, the scenario assuming a joint occurrence of a strong interest rate increase, a recession and a stock market crash, would lead to substantial losses and a considerable decrease of excess capital in the banking industry.

The scenario analysis is subject to a number of limitations. In particular, stress tests based on statistical inference assume that the observed structural relation is stable. For example, the speed of adjustment of the banking sector's exposure to a particular risk factor during a period of stress is assumed constant. As a consequence, the figures reported in Table 1 would overestimate the impact of a macroeconomic scenario, should the speed of exposure adjustment be higher now than during the period considered for the estimation. Another limitation lies in the fact that the analysis does not account for possible non-linearities in the influence of macro variables on banks' profitability. In particular, synergy effects may amplify the impact on profitability of each macroeconomic variable when various shocks occur simultaneously. Because the period used for the estimation never saw the joint occurrence of a strong interest rate increase, a recession and a stock market crash, the model may underestimate the real effect of such a combination of shocks. Despite these reservations, the scenario analysis seems to corroborate the current assessment that the Swiss banking sector is quite robust with regard to reasonable macroeconomic shocks.

Estimated profits (total banking sector)

Table 1

Scenario	Profits (in % of excess capital)	Difference with respect to the baseline scenario (percentage points)
1. Baseline scenario*	24 %	
2. Interest rates increase (+200 bp; parallel shift)	16 %	–8
3. Recession (GDP growth: –1 %)	18 %	–6
4. Stock market crash (SPI: –20 %)	–5 %	–29
5. Combined scenario (2. to 4. combined)	–21 %	–45

*The baseline scenario approximately corresponds to the status quo.

²⁴ This box is based on Lehmann and Manz (2004), "Makroökonomische Einflussfaktoren auf die Ertragslage der Schweizer Banken", Swiss National Bank, mimeo.

Low direct interest rate risk

A *direct* interest-rate risk exists if there is serious mismatching between the repricing maturities²⁵ 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 SFBC 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 2.0% of available capital (year-end 2002: 0.5%). At most banks, interest-rate risk is close to this mean. Major deviations are comparatively rare (see Chart 14).

Since banks generally finance long-term lending through short-term borrowing, 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 long-term debt papers (for example, bonds and mortgage-backed securities). The discrepancy between the effective maturities of assets and liabilities is therefore low. Finally, banks hedge some of their direct interest-rate risk through derivatives (e.g. interest swaps).

However, it should be noted that these data only relate to the valuation risk resulting from interest-rate movements, not the indirect risk (see previous section). It should also be stressed that the present estimate of interest-rate risk is based to some extent on the banks' hypotheses of the extent to which fluctuations in interest rates can be passed on to their clients.²⁶

Interest-rate risk

Chart 14

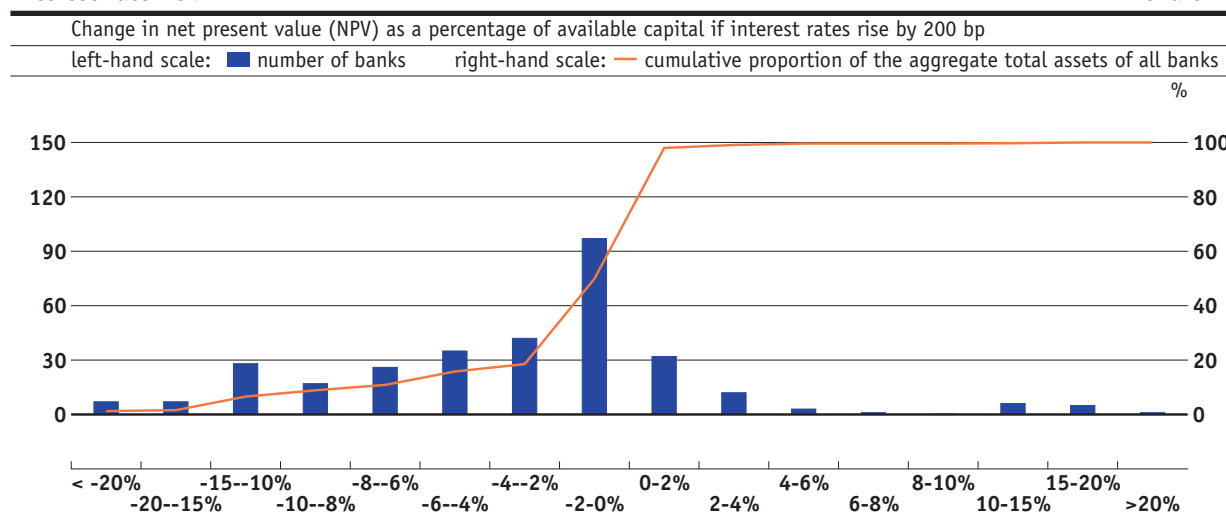


Chart 14: Sources: SNB; SFBC

25 Time interval until interest rates can be readjusted.

26 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.

Slightly higher market risk

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.²⁷ In absolute terms, market risk in the Swiss banking sector rose by 7% year-on-year. However, relative to total capital requirements, market risk only increased slightly from 11.3% to 12.3%. A breakdown by category of bank shows that this share was 9.4% at the cantonal banks (2002: 8.8%), 12.3% at the big banks (2002: 11.3%), 4.9% at the regional banks (2002: 4.7%) and 2.6% at the Raiffeisen banks (2002: 2.6%).

Looking solely at the market risk that is directly related to the banks' trading activities, the absolute rise compared with 2002 was far more pronounced (+18%). At the big banks it was particularly high at +22%, having declined for the previous three years. Despite this, the market risk on the trading book is still lower than in the late nineties. A further rise is likely this year as some banks, especially the big banks, have indicated that they intend to raise their risk profile.

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. Secondly, this risk indicator 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.

Our scenario analyses (see Box 1, p. 28) provide a guide to the overall impact of market risk, i.e. the sum of the direct and indirect risks mentioned here. The estimates show that a sharp drop in the Swiss equity market (SPI) would have a substantial impact on the banking sector's profitability.

4 Capital base

Excess capital increased considerably in 2003 and is historically high at all categories of banks. Internationally, the big banks rank at the forefront in terms of risk-weighted capital, but bring up the rear in terms of unweighted capital. This discrepancy can be explained to some extent by the relatively high proportion of assets with a low risk weighting, for example collateralised loans and claims on banks.

Box 2: Regulatory framework

The Swiss Banking Act prescribes minimum capital adequacy ratios (see Banking Ordinance Art. 11–14). Essentially capital backing is required for all on-balance-sheet assets, off-balance-sheet operations and other open items in the trading book and elsewhere. These items are extremely varied, and 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 SFBC can relax or tighten the regulations in specific cases (see Banking Act Art. 4 Section 3). Cantonal banks with a state guarantee are permitted to reduce required capital by up to 12.5% (see Banking Ordinance Art. 13 lit. b).

The *eligible capital* used to calculate capital adequacy comprises three components: core capital, supplementary capital and additional capital. Core capital comprises paid-up equity 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 *unweighted capital ratio* comprises eligible capital as a percentage of total assets.

Clear rise in risk-weighted capital ratios

All categories of banks raised their *risk-weighted capital ratios* considerably in 2003. The banking sector as a whole increased excess capital as a percentage of required capital from 54% to 64%. At the big banks, excess capital was 46% of required capital while at the cantonal banks it was as high as 58%. The corresponding values for the previous year were 33% and 36% respectively. The relative increase was slightly lower at the regional banks (from 52% to 56%) and the Raiffeisen banks (from 66% to 75%) (see Chart 15).

²⁷ We take the minimum capital requirements derived from items exposed to market risks as a measure of market risks.

At all categories of banks, the improvement in risk-weighted capital ratios was mainly due to the rise in *eligible capital*. For the banking sector as a whole, this increased 4% year-on-year in 2003. This clear improvement was principally attributable to the high profitability of the banking sector.²⁸ Despite the increase in total assets (+9% for the sector as a whole), the increase in *required capital* was limited (regional and Raiffeisen banks) or reduced (big banks and cantonal banks) by switches to assets with different risk weightings.

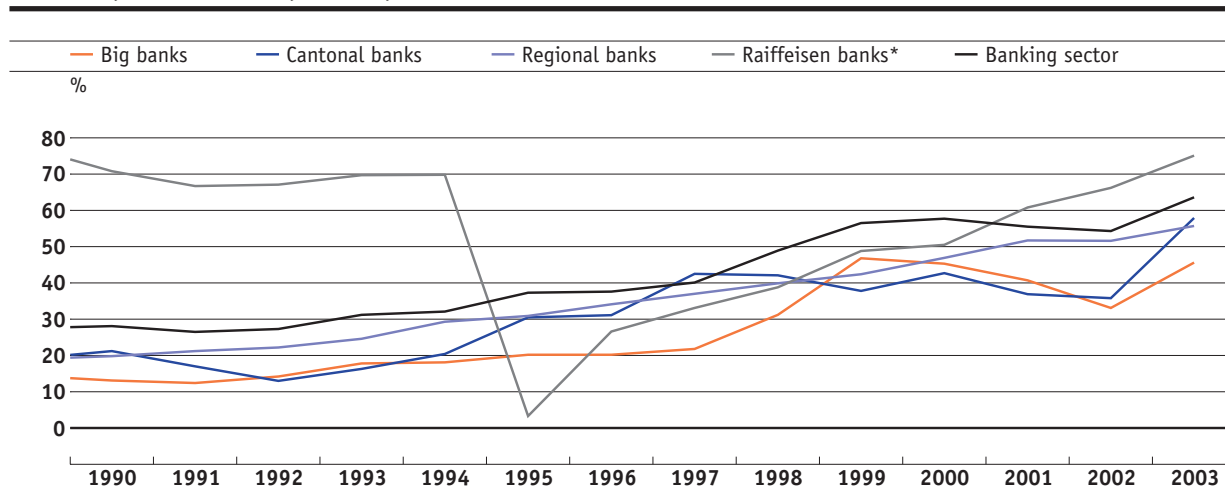
From a historical perspective, the Swiss banks have strong risk-weighted capital. In the past ten years, the capitalisation of most banks has improved considerably (see Chart 16, bars). This applies to both small and larger banks: The market share – measured in terms of assets – of those banks

with high excess capital has risen (see Chart 16, lines).

The picture as regards *unweighted capital ratios* is more mixed. Only the cantonal banks registered a clear rise from 6.1% in 2002 to 7.0% at year-end 2003. The ratio of capital to total assets was virtually unchanged at around 7% at the regional and Raiffeisen banks. By contrast, the unweighted capital ratio continued to decline at the big banks (from 3.1% to just under 3%) and in the banking sector as a whole (from 4.6% to 4.4%). This is part of a longer-term trend: More banks had higher unweighted capital ratios in 2003 than in 1993 (see Chart 17; bars) but their importance – in terms of their share of the banking sector's total assets – has declined (see Chart 17, lines). It should be noted that there are no regulatory restrictions on the ratio of capital

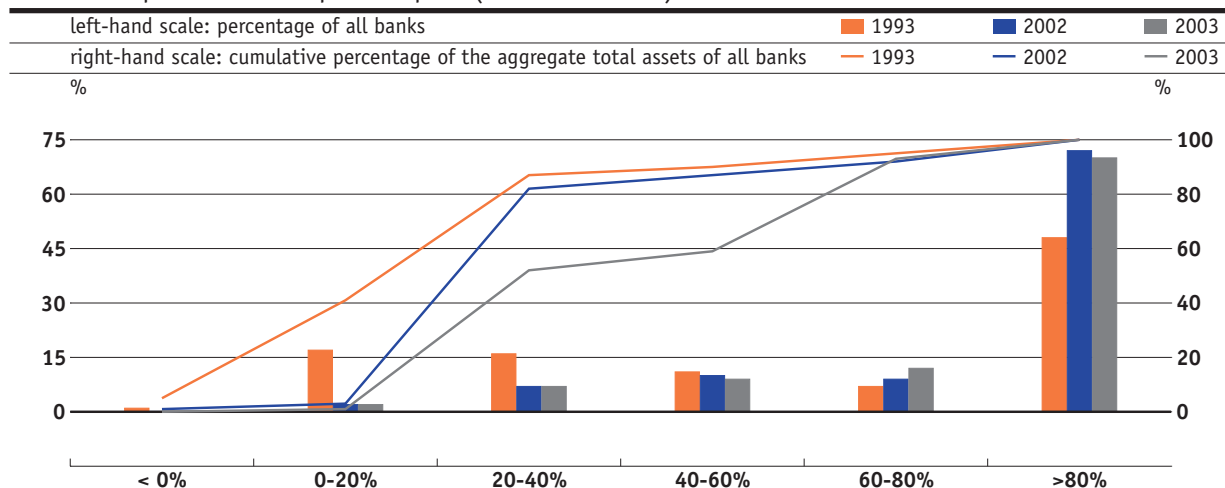
Excess capital in % of required capital

Chart 15



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

Chart 16



28 See Section 2.

Chart 15: Sources: SNB; SFBC

* 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.

Chart 16: Sources: SNB; SFBC

and unweighted assets. The regulatory capital adequacy requirements in Switzerland refer exclusively to risk-weighted rules (see Box 2, p. 30). Nevertheless, unweighted capital ratios have to be taken into account when assessing the solidity of the capital base: they reflect the buffer available to the bank to counter risks that are either not covered or inaccurately covered by the current capital adequacy regulations.²⁹

The comparison between risk-weighted and unweighted capital ratios gives a mixed picture of the capitalisation of Swiss banks. As an additional instrument to evaluate the adequacy of the banking sector's capital base, we conducted a scenario analysis (see Box 1, p. 28). This analysis suggests that, overall, the Swiss banks' capital base is adequate. According to these estimates, the banking sector should be well able to withstand even larger shocks. All categories of banks should be able to continue reporting excess capital, even in the event of an unfavourable scenario featuring higher interest rates, a recession and a slump on the financial markets. A deterioration in operating conditions on this scale would nevertheless trim excess capital in all groups and could seriously weaken some individual banks.

Unweighted capital ratios (individual banks)

Chart 17

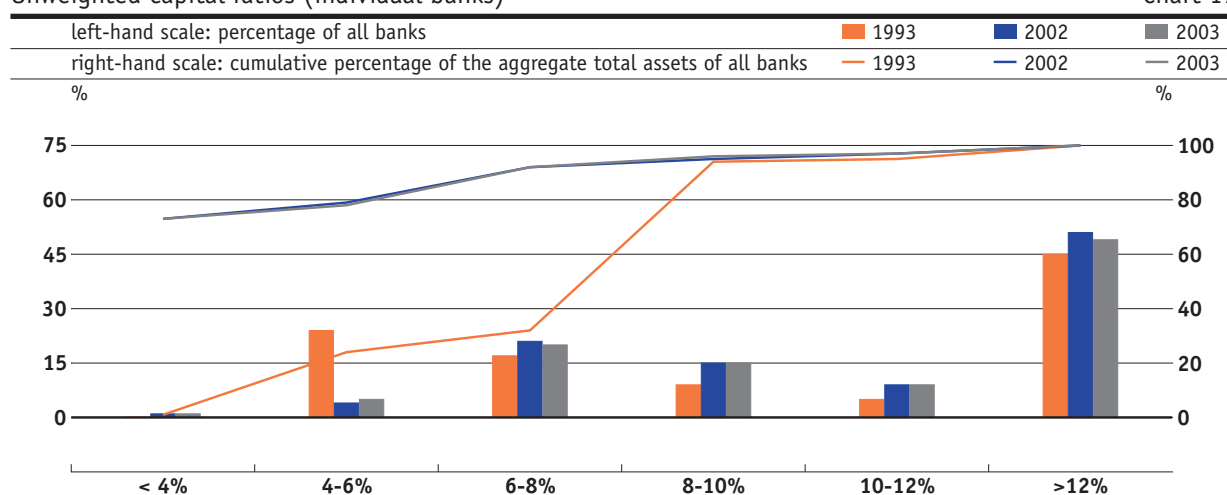


Chart 17: Sources: SNB; SFBC

29 The revision of the Basel Accord, which forms the basis for standards on risk-weighted capital, was precisely triggered by a desire to reflect the various banking risks more accurately.

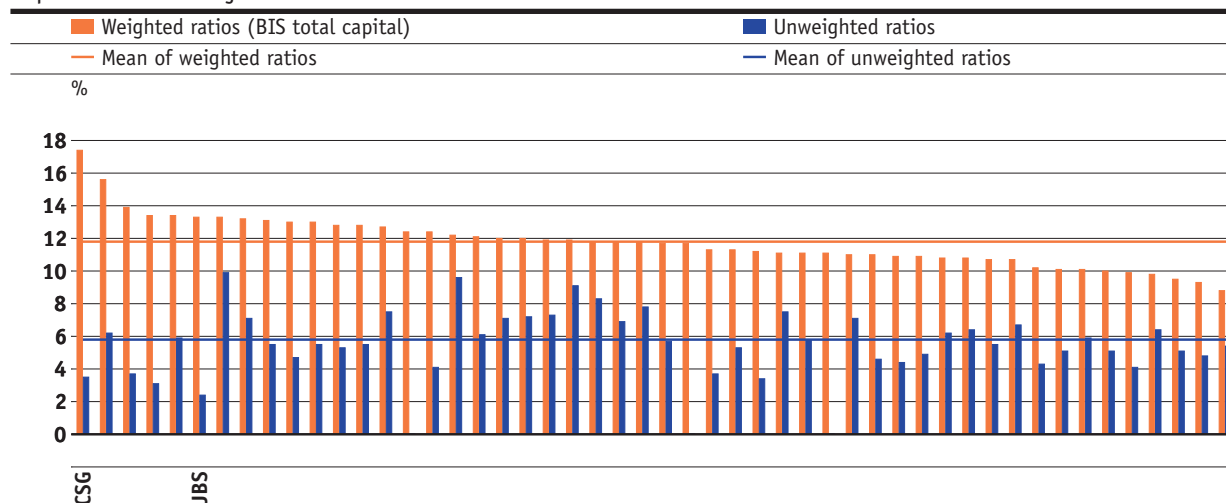
Discrepancy between risk-weighted and unweighted capital ratios at the big banks

At the big banks, the two capital ratios have diverged in recent years. While the risk-weighted ratios are essentially rising, the unweighted ratios are declining. In other words, capital coverage of total assets is declining, and yet these banks are able to report a rise in excess capital based on risk-weighted ratios. This trend has led to a discrepancy between risk-weighted and unweighted capital ratios at the big Swiss banks. This discrepancy appears particularly large in an international comparison. When compared with 50 of the largest international banks in the USA, the EU and Japan, the big Swiss banks are among the leaders in terms of risk-weighted ratios³⁰ but bring up the rear in terms of unweighted ratios³¹ (see Chart 18).³²

This is partly because, in international comparison, assets with a lower risk weighting account for a high proportion of the balance sheet at Swiss big banks (30%). Liquid assets (0.3%), reverse repurchase agreements³³ (17%) and other claims on banks and mortgage claims amounting to 3% and 10% respectively result in a relatively high balance-sheet total, yet their risk-weighting under capital adequacy requirements is low. If these so-called safe assets were deducted from total assets, the unweighted capital ratio for the big banks would be just over 4% rather than just under 3%.

Capital ratios of major international banks*

Chart 18



30 Total capital as a percentage of risk-weighted assets. Risk weighting based on BIS.

31 Total capital as a percentage of total assets.

32 Source: Annual Reports.

Chart 18: Sources: Annual reports for 2002 and 2003

* Comprises the five largest banks in the USA, Canada, Japan and all European countries according to "The Banker" (July 2003), where their total assets are over USD 100 bn.

33 In a repurchase transaction, the recipient of funds sells securities to the provider of the funds. At the same time, an agreement is entered into to repurchase securities of the same type and volume from the provider of the funds at a subsequent point in time. From the fund provider's viewpoint (in this case, big banks) this is a reverse repurchase agreement. In economic terms, the transactions comprise a loan secured by securities.

5 Market assessment

Market assessment of the soundness of a bank is reflected in credit ratings, yield spreads and share prices. These indicators show that the situation in the Swiss banking sector is essentially good and has improved since 2002. The market assessment thus essentially matches the picture generated by the profits, risk profile and capital adequacy trends at the banks. Overall, however, the market points to an improvement which appears far more pronounced than the remaining indicators would suggest.

Stable ratings

21 of the 342 banks in Switzerland have been rated by Moody's and/or Standard & Poor's. Their ratings remained virtually unchanged in 2003.³⁴ With a few exceptions, all the rated banks have a medium to very high rating. The rating agencies also issue an outlook showing the anticipated medium-term trend of the ratings. Following a general deterioration in the outlook in 2002, the outlook reports by the rating agencies in 2003 anticipated more upgrades than downgrades. Overall, according to the rating agencies, the ratings should remain relatively stable over the medium term.

Comparing the two big Swiss banks with a sample of 30 major international banks shows that UBS ranks among the top-rated banks while CSG is somewhere in mid-field (see Chart 19). Following downgrades in 2002, a better outlook was issued for both banks in 2003. Both rating agencies currently assess their medium-term outlook as stable. The picture is similar for the major foreign banks. The majority of ratings were unchanged while the outlooks are generally more positive than a year earlier.

Decline in the yield spread on bank bonds

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, the higher the spread between the bond and a risk-free government bond. In 2003 the spread between the bank bond and sovereign bond indices dropped by more than half. This trend can be observed at virtually all banks. However, it was particularly marked at those banks – CSG, BCV and Banque Cantonale de Genève (BCGE) – where spreads had increased strongly between mid-2001 and end-2002 (see Chart 20). Spreads at all banks are low – in some cases very low – compared with the average for the past five years.

In line with this trend, the market currently sees the credit risk of the banks – apart from certain exceptions – as low. As shown by the price of credit default swaps in Chart 5, the major Swiss banks are considered very sound in comparison with international banks.

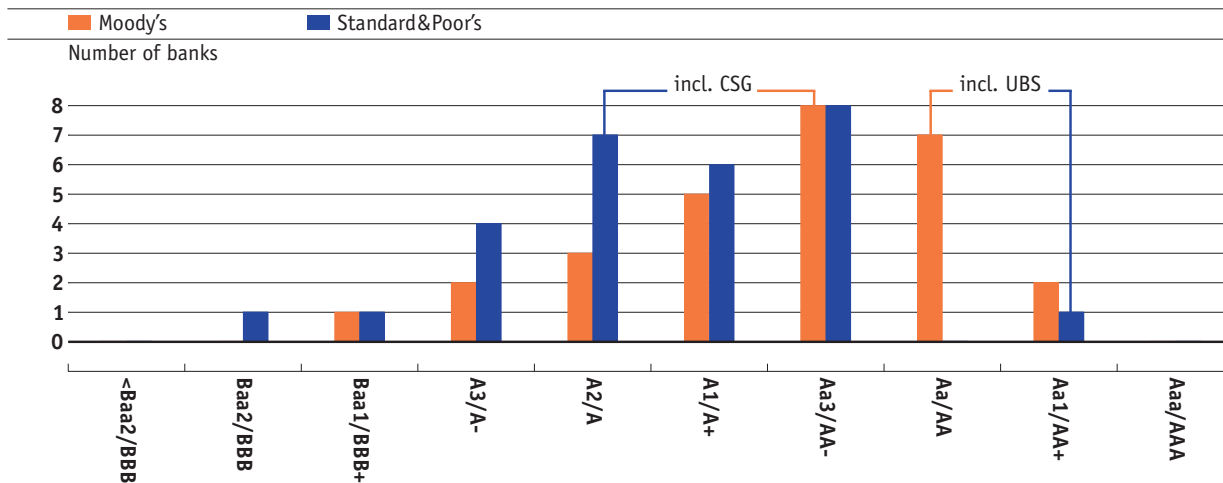
Rise in the market capitalisation of banks

The market capitalisation of a bank reflects the market assessment of its net present value and thus its future outlook. The change in a stock market index for the banking sector can therefore be seen as an indicator of the market valuation of the banks included in the index.

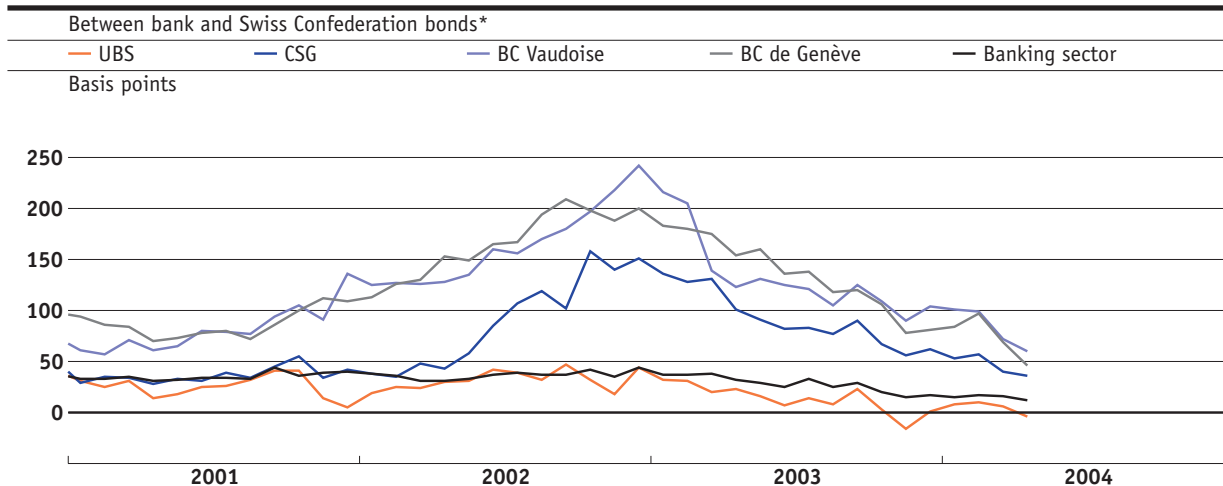
The SPI banking index declined steadily between 2001 and the first quarter of 2003. Since then it has risen significantly (see Chart 21). This increase in the banks' market valuation could partly be a reflection of the banks' effective action to reduce costs. Given the sharp rise within a short space of time, however, the stock market trend – like the spreads outlined above – could merely reflect exaggerated swings between pessimism and optimism.

Comparison with the bank indices for the USA and the EU shows a similar but generally less pronounced trend in other countries. The higher volatility of the Swiss banking index reflects the sector's lower diversification – due to the dominance of the two big banks in a highly concentrated market – than the other indices. All three indices are currently above the average for the past six years.

³⁴ The only upgrades/downgrades by Moody's were St. Galler Kantonbank and BSI AG respectively. Sources: Moody's Investor Services, Standard & Poor's.



Spreads



Banking indices: Switzerland and abroad

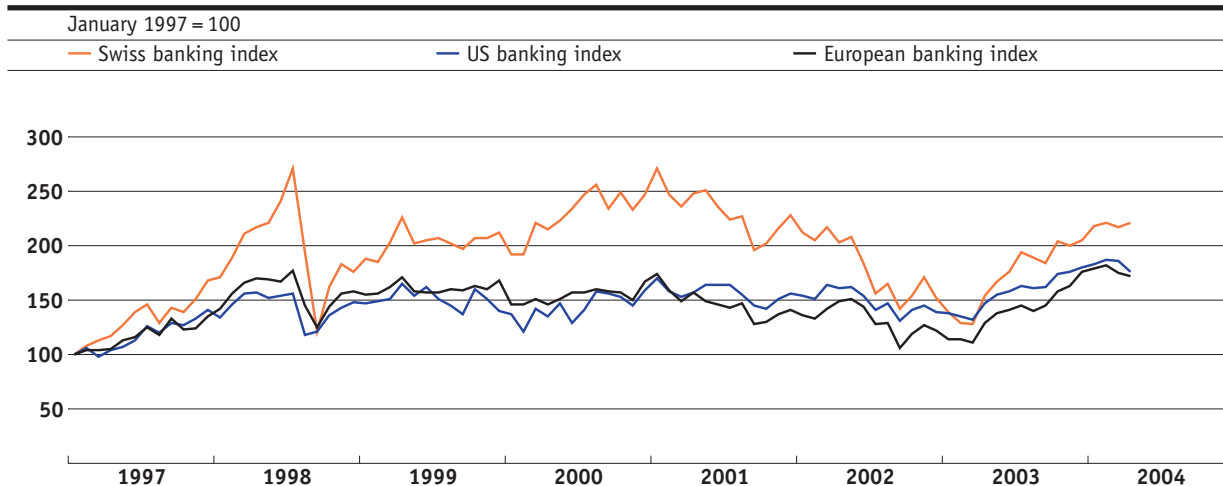


Chart 19: Sources: Moody's; Standard & Poor's, May 2004
 * Comprises 30 of the world's largest banks according to "The Banker" (July 2003) provided they are rated by both Moody's and Standard & Poor's.

Chart 21: Source: Datastream

Chart 20: Sources: SNB; SFBC; Datastream
 * Average spread over all available securities satisfying the following conditions: fixed coupons; no options; CHF denominated; residual term of at least two years. End-month calculations.

6 Stress index for the banking sector

The previous sections of this report cover different aspects of the banking sector, all of which are potentially relevant for its stability. In this section, we combine these pieces of information within a “stress index” measuring the current degree of instability in the Swiss banking sector. We also develop a forecasting model for this index, using a set of macroeconomic and financial variables reflecting potential economic imbalances. This allows the identification of potential sources of future instability. Box 3 (p. 37) outlines the methods used to produce the stress index and its forecast.

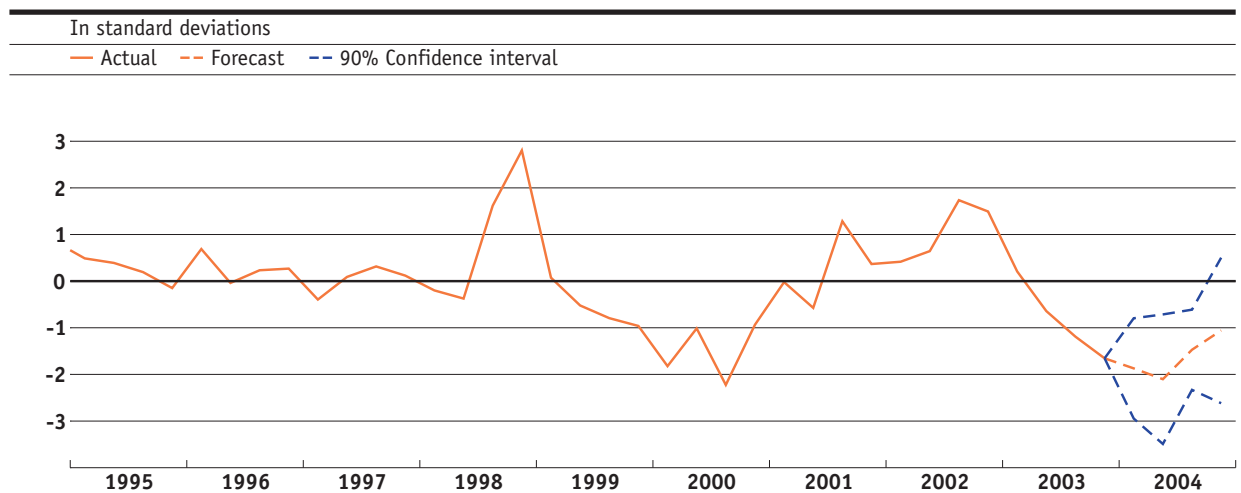
According to this indicator, 2003 was a relatively calm period in the banking sector (see Chart 22). Firstly, the average level of stress was low by historical standards. The last time a comparable level of stress

was observed was in 2000. Secondly, the level of stress was far lower than in 2002. This essentially reflected the rise in banks’ share prices and the improvement in their profits and capital base (see Chart 23).

Our forecasting model suggests that the level of stress should remain low in 2004, although it could increase slightly (see Chart 22). Such an increase would principally be a correction of the index – which is currently below the level forecasted by the model – towards this level. The stress in the banking sector should remain relatively low in the medium term because most of the financial and macro-economic variables which influence it – the housing price index, GDP, investment ratio, credit ratio – are below their long-term trend. A sudden downward correction in these variables – and a rise in the related stress – therefore seems unlikely. The only exception relates to the stock market index.

Stress index*

Chart 22



Stress index – Contribution of individual stress symptoms to total stress*

Chart 23

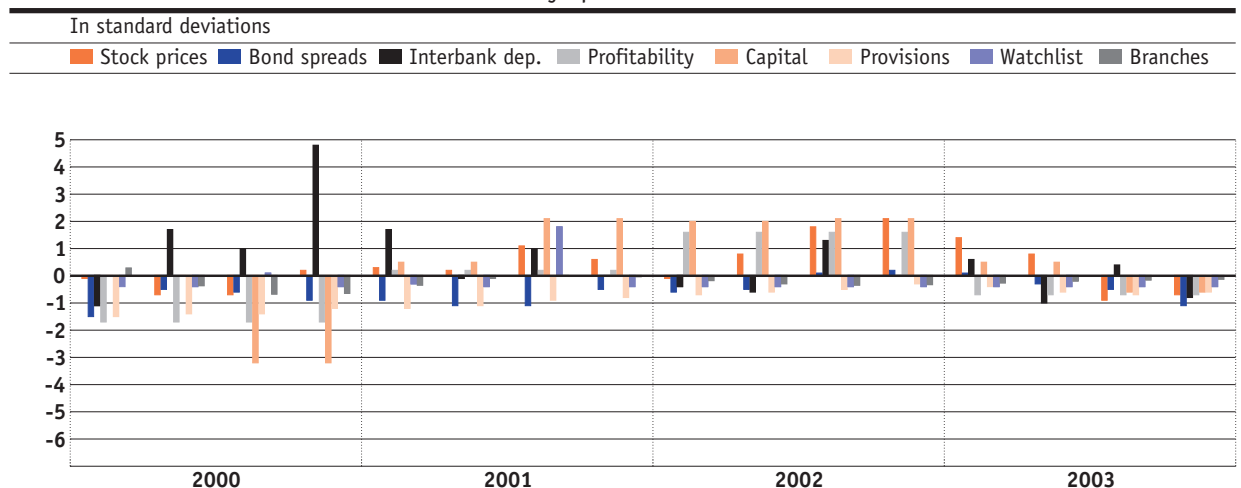


Chart 22: Sources: SNB; SFBC; Datastream; Wüest & Partner; Federal Office for Statistics; IMF

*The higher the level of the index, the higher the level of stress in the Swiss banking sector. The index is expressed in terms of standard deviations from its 1987–2003 average. A value above (below) zero indicates that the stress is above (below) its historical average. For a description of the underlying variables and the methodology, see Box 3.

Chart 23: Sources: SNB; SFBC; Datastream

*The higher the intensity of an individual stress symptom is (e.g. the sharper the fall in banks’ stock prices), the higher the level of the stress index. A value above (below) zero indicates that the intensity of an individual crisis symptom is above (below) its historical average. For a description of the underlying variables and the methodology, see Box 3.

Box 3: Measuring and forecasting stress in the Swiss banking sector – methodology³⁵

Construction of the Stress Index

The index is a continuous indicator of the level of stress experienced by the Swiss banking sector at a given date. It is based on a set of variables – including market data, balance sheet data, non-public data from the supervisory authorities and structural data – which all represent possible symptoms of stress in the banking sector.

These symptoms are:

- A decline in the banks' share price
- An increase in the banks' bond yield spreads
- A fall in interbank deposits
- A decrease in the banks' profitability
- A decrease in the banks' capital base
- An increase in the banks' provisioning rate
- The share of total assets held by banks listed on the regulator's watchlist
- A decrease in the number of banks' branches

The higher the intensity of the individual stress symptoms, the higher the stress index. To build the index, the eight variables representing the symptoms of stress described above, are first normalised and then aggregated with identical weights. The index is expressed in terms of standard deviations from its historical average. A positive (negative) value indicates that the stress is above (below) its historical average.

Because the index is based on a large spectrum of potential symptoms of instability, it should appropriately reflect the different types of stress experienced by the banking sector. The values taken by the index between 1987 – the starting date of the index – and 2003 are consistent with this assumption. The index peaked three times and each peak corresponds to a period of significant stress for the Swiss banking sector with different sources and symptoms: (i) the early 90s, which have been characterised by a real estate crisis in Switzerland, (ii) 1998, when the Russian and LTCM crisis occurred and (iii) the 2001/2002 period, which was characterised by a stock market crash and an economic slowdown.

Forecasting the Stress Index

Past experience suggests that banking crises tend to arise when macroeconomic and financial imbalances prevail. The (sudden) correction of these imbalances may eventually cause situations of stress in the banking system.

The forecasting model includes five macroeconomic and financial variables that are reliable predictors of banking crises according to several studies: the stock market index, the housing price index, gross domestic product (GDP), the investment ratio (investment/GDP) and the credit ratio (private credits/GDP). The measure of imbalance is defined as the gap between the value taken by an economic variable and its trend, where the trend is computed using the Hodrick-Prescott filter. A positive credit ratio gap means, for example, that credits are growing faster than their sustainable rate. This could be interpreted as a sign that banks have lowered their lending standards. This imbalance will start to unwind when borrowers find it more difficult to service their debt (e.g. because of an interest rate rise, a recession or a drop in asset prices). For the banks that are engaged in lending business, the share of non-performing loans and the provisioning

increase, which eventually leads to higher levels of stress. For the other four macroeconomic and financial variables one can think of similar mechanisms in which the correction of an existing imbalance could lead to higher levels of stress.

The forecast is based on a linear regression of the stress index on its own lagged value and on the gaps of the macroeconomic and financial variables:

$$y_{t+h} = \alpha + \beta_0 y_t + \beta_1 x_{1,t-z_1} + \beta_2 x_{2,t-z_2} + \dots + \beta_k x_{k,t-z_k} + \varepsilon_t$$

where y_{t+h} is the forecast of the stress index, h the forecast horizon, y_t the stress index at time t , $x_{k,t-z_k}$ the gaps of the variables k with a time lag of z_k quarters. A positive gap – i.e. the building up of an imbalance – signals that a future correction is likely to take place, which could lead to a higher level of stress for the banks. The regression is estimated with a GARCH(1,1) approach.

The results comprise forecasts for 1–4 quarters ahead. In the case of the one-quarter forecast, the chosen lags are 12 quarters for the housing price index, 18 quarters for the share price index, 9 quarters for the credit ratio, 4 quarters for the investment ratio and 26 quarters for the GDP. The four forecast models are coherent regarding their lag structure and the models' results are relatively robust with regard to changes in the lag structure.

With R^2 between 0.51 and 0.58, depending on the forecast horizon, the fit of the models can be considered satisfactory. The out-of-sample error ratios (percentage of errors in the forecast of the direction of the stress index evolution) lie between 27.8% and 36.1%, suggesting fairly good predictive power.

Limitations of the method

Although the forecasting model for the stress index performs relatively well, it is subject to several limitations. Firstly, the macroeconomic and financial imbalances are computed using a rather simple and mechanical Hodrick-Prescott filter. The main advantage of this approach is that it does not impose much structure on the model. However, it may not guarantee the most efficient use of the information available to assess the magnitude of the imbalances. Secondly, different studies have emphasised that banking crises are complex phenomena, which may involve non-linear interactions between the variables. The model used to forecast the stress index, however, does not account for such non-linearities. Finally, other non-macroeconomic/financial factors that are not included in the model (e.g., deregulation) may also influence the level of stress experienced by the banking sector.

35 This box is based on Hanschel and Monnin (2004), "Measuring and Forecasting Stress in the Banking Sector, Evidence from Switzerland", Swiss National Bank, mimeo.

Part II: Financial Market Infrastructure

1 Introduction

A safe and efficient financial market infrastructure is a key prerequisite for a stable financial system. Alongside stock 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). Of particular interest are those payment and securities settlement systems which are considered to be important to the stability of the Swiss financial system. The chief feature of these systems is that they may trigger or channel the spread of a systemic crisis and thus jeopardise the stability of the financial system.

The analysis of the financial market infrastructure differs from the analysis of the banking sector in that the weaknesses – and thus the risks – inherent in the infrastructure do not change constantly as a result of cyclical fluctuations or market trends. On the contrary, its stability depends on structural factors where change is rare and gradual. The statement made in last year's report on the stability of the financial system – namely, that Switzerland has a very well-functioning infrastructure and that safety and efficiency are high by international standards – therefore remains valid. The Swiss Interbank Clearing (SIC) system for payments and the securities settlement system SECOM, both of which are elements in the Swiss value chain, have proven their worth over the years and their architectures help minimise settlement risks.

Given the differences in the way in which the stability of the banking sector and financial market infrastructure are evaluated, the approach used in this part of the report is different from that used in Part I. Instead of monitoring and assessing a large number of indicators, this part reports on selected trends and factors that are of significance for the safety and efficiency of the financial market infrastructure. The main events that directly affect the stability of the financial market infrastructure include the introduction of new payment and securities settlement systems and fundamental changes to established infrastructures. Major changes in the regulatory environment can also have an impact on financial market infrastructure. Such changes are relatively rare but are often a response to longer term underlying trends such as a change in risk conditions or risk awareness or a change in the needs of market participants.

Part II of this report looks in more detail at three elements that have a direct or indirect impact on the stability of the financial market infrastructure and thus affect the stability of the financial system. First, we analyse the new legislation for the oversight of payments and securities settlement systems, created by the new National Bank Act, which came into effect on 1 May 2004. As well as providing an overview of the main regulatory requirements, this section looks at the practical implementation of the new law. The following two sections are dedicated to two systems that recently started operating: the central counterparty SIS x-clear, which forms a new element in the tried and tested Swiss value chain, and the global multi-currency payment system Continuous Linked Settlement (CLS), which is used for the settlement of foreign exchange transactions. The mode of operation, main features and experience to date with these systems is outlined. In particular, their contribution to the stability of the financial system is analysed.

2 New statutory basis for oversight of payment and securities settlement systems

The new National Bank Act (NBA) came into force on 1 May 2004. It explicitly gives the SNB responsibility for overseeing payment and securities settlement systems. Oversight is an important tool to enable the SNB to carry out the tasks imposed on it by law, namely contributing to the stability of the financial system and facilitating and securing the operation of cashless payment systems.

The scope and purpose of oversight of these systems and the necessary cooperation with other authorities are set out in Articles 19–21 NBA. The SNB's powers of oversight in the area of payment and securities settlement systems are set out in the National Bank Ordinance (NBO) of 18 March 2004 and the related Explanatory Note.¹

So far, the SNB has chiefly overseen the Swiss Interbank Clearing (SIC) system, which is used for large-value payments. Oversight was based principally on agreements between the SNB and Swiss Interbank Clearing AG. Providing a statutory basis for oversight reinforces this task and extends it to all systemically important payment and securities settlement systems.

Systemic risks justify oversight

In certain circumstances, payment and securities settlement systems have the potential to jeopardise the stability of the financial system. A system is considered to be important to the stability of the financial system if operational or technical problems within the system could lead to serious credit or liquidity problems at financial intermediaries or if payment or delivery problems of individual participants might be transferred to other participants, thus triggering serious credit or liquidity problems for financial intermediaries. In other words, systemically important payment and securities settlement systems could play a key role by triggering or transmitting shocks that impair the stability of the financial system (systemic crisis).

If it is left to the market to shape systemically important systems, this could result in a sub-optimum situation, especially with regard to safety, as a result of potential negative externalities. Negative externalities arise, in particular, if the economic costs of a systemic crisis triggered or transmitted by a payment or securities settlement system are higher than the costs borne by those directly responsible for

shaping the system.² Since private-sector decision-makers tend to ignore these potential negative externalities, there is a danger that they could invest too little – from an overall economic viewpoint – in the safety of such systems. It is because of such factors that the SNB has been given the task of overseeing systemically important payment and securities settlement systems. Its goal is to ensure an optimum financial market infrastructure from an overall economic viewpoint.

Determining which systems are systemically important

Oversight is geared primarily to maintaining the stability of the Swiss financial system, i.e. the SNB oversees payment and securities settlement systems that could pose a systemic risk to the Swiss financial market. The focus is on systems operated in Switzerland. However, financial market infrastructures whose operators are domiciled outside Switzerland could also jeopardise the stability of the Swiss financial system, especially if major parts of these operations or significant participants are located in Switzerland.

It is therefore essential to identify the systems that are systemically important. For this purpose, the SNB examines various factors, including the type, value and number of transactions handled by a particular system, the type and number of interfaces between this system and other payment and securities settlement systems, and the alternatives available.

In order to establish whether a system is systemically important the SNB needs access to the information required to evaluate these factors. The National Bank Ordinance therefore sets out disclosure requirements for system operators. These apply to all operators of securities settlement systems and payment systems that settle at least CHF 25 billion p.a.³

Minimum requirements based on international standards

Operators of systemically important payment and securities settlement systems have to comply with the minimum requirements set out in the National Bank Ordinance (Art. 22–34 NBO). These are essentially based on two international standards, the “Core Principles for Systemically Important Payment Systems”⁴ and the “Recommendations for Securities Settlement Systems”⁵ published by the Committee on Payments and Settlement Systems (CPSS) and the

1 The National Bank Act and the associated Ordinance can be downloaded in German, French and English from the SNB's website (www.snb.ch). The Explanatory Note is available in German only.

2 Most of the Swiss payment and securities settlement systems are based on cooperative governance structures, so the participants have a say in shaping them.

3 Financial intermediaries who provide internal payments accounting and settlement services for customers (so-called in-house payment systems) are exempt from oversight and thus from the disclosure requirements: Art. 18 par. 3 NBO.

4 See CPSS (2001), No. 43, “Core Principles for Systemically Important Payment Systems”, www.bis.org.

5 See CPSS and IOSCO (2001), No. 46, “Recommendations for Securities Settlement Systems”, www.bis.org.

CPSS together with the International Organisation of Securities Commissions (IOSCO), respectively. Further, the requirements for operational reliability and information security are heavily influenced by IT standards like the Cobit framework (Control Objectives for Information and Related Technology) as well as the ISO 17799-2 standard. Finally, the organisational and disclosure requirements are inspired by several codes of best practice for corporate governance.

The minimum requirements essentially aim to minimise systemic risk. By contrast, competition as-

pects and issues relating to the protection of consumers and creditors fall within the scope of other authorities such as the Competition Commission and the Federal Banking Commission. Like the international standards, the minimum requirements are focused on specific goals. In other words, system operators have to comply with certain requirements, but there are no stipulations on how to meet them. The minimum requirements are more specific than the international standards to facilitate monitoring of compliance. The main requirements are set out in Box 4 (p. 41).

Box 4: Overview of minimum requirements

Organisation (Art. 22 NBO)

Requirements on governance and control focus on security policy and risk management. These must be geared to ensuring that the system cannot cause a systemic crisis or act as a channel that spreads a systemic crisis. The training and integrity of staff and high-quality documentation are also important to ensure that the system functions smoothly.

Public disclosures (Art. 23 NBO)

Because of its relevance for the Swiss financial system, the system operator is required to ensure sufficient public transparency. This includes reporting on material factors such as its financial position and earnings, the outline of its organisational structure and control of credit and liquidity risks.

Contractual foundations (Art. 24 NBO)

A sound and transparent legal basis is extremely important for the safety of a payment or securities settlement system. The contractual foundations must clearly outline the operator's access policy, the rights and obligations of the parties involved and the rules and procedures for operating the system. Contracts with participants must make clear the risks of participating in the system. Mutual rights and obligations must also be defined in a contract if material business operations are outsourced. Moreover, the system operator is responsible for ensuring that such contracts are effective and enforceable in all relevant jurisdictions.

Controlling and limiting credit and liquidity risks (Arts. 25 and 26 NBO)

The operator of a system must make sure that payments or securities deliveries are settled with finality ideally in real-time but at the latest by the end of the settlement day. Further, the operator must be able to identify and limit participants' credit and liquidity risks and, where relevant, its own credit and liquidity risks. The operator must continuously monitor the clearing and settlement process to ensure timely identification of problems and the prompt initiation of suitable action. Moreover, the operator must create the conditions required to ensure participants are able to identify, limit and monitor their own risks.

Requirements for operators of certain types of systems (Art. 27 NBO)

Specific requirements are made on operators of netting systems, central counterparties and arrangements for the settlement of mutual obligations arising from securities and foreign exchange transactions. Operators of netting systems and

central counterparties must be able to settle transactions in due time even if the two participants with the largest settlement liabilities or the two participants with the largest exposure vis-à-vis the central counterparty do not fulfil their obligations. In the case of mutual transactions there is a risk that one party meets its payment or delivery obligation but does not receive the expected payment or delivery on time or even at all. To prevent this principal risk, the system operator must take steps to allow, for example, delivery versus payment, delivery versus delivery or payment versus payment.

Means of payment (Art. 28 NBO)

The risks inherent in payment and securities settlement are partly dependent on the means of payment used. Consequently, it is stipulated that wherever possible payments should be settled via sight deposits at a central bank. If a different means of payment is used, it should display a similar degree of security as regards credit and liquidity risks.

Security requirements (Arts. 29–32 NBO)

These requirements are designed to minimise the technical and operational risks inherent in such systems and thus to ensure that they do not trigger a systemic crisis. The main focus is on availability of the system, integrity and confidentiality of data and traceability. To achieve these high-level objectives, emphasis is put on adequate business continuity planning and management and system operators are required to observe recognised standards of information security. The adequacy of and compliance with the chosen standards and control objectives must be audited by an external entity on a regular basis.

Access to the system (Arts. 33 and 34 NBO)

Open access to systemically important payment and securities settlement systems is desirable from an economic viewpoint. However, completely open and unrestricted access to such systems could mean that some parties admitted represent an excessively high risk to the system. Accordingly, the operator has to set out and publish minimum requirements for participation in the system. These criteria must be geared to minimising risks or raising efficiency. The conditions of participation must also include clear rules for excluding participants.

Practical implementation of oversight

To enable the SNB to check compliance with the minimum requirements, operators of systemically important payment and securities settlement systems have to meet extensive reporting and disclosure requirements (Arts. 35 and 36 NBO). In particular, they have to give the SNB information on all relevant areas of operation and provide access to their facilities. Further, periodic submission of specific data and reports is required. For example, they must submit an annual report on compliance with the minimum requirements and quarterly data on clearing and settlement of transactions.

For the purposes of oversight, the SNB works with other supervisory authorities. Cooperation is mainly required for two types of system operators: firstly, those who are also subject to the supervision of the Swiss Federal Banking Commission (SFBC) and secondly, those domiciled outside Switzerland. In the first case, the SFBC mainly focuses on capital adequacy while the SNB is responsible for overseeing the system. To avoid duplication of work and contradictions, the two authorities work together closely and coordinate their work. Oversight of systems whose operators are domiciled outside Switzerland requires cooperation with foreign authorities. In such cases, the main responsibility lies with the lead overseer. This is normally the authority in the country where the operator is domiciled. In such cases, the SNB's activities are mainly confined to assessing oversight by the lead overseer.

If the operator does not meet the minimum requirements, the SNB issues a recommendation. This essentially calls on the operator to ensure compliance with the statutory requirements by a given deadline. If this does not elicit suitable action by the operator, the SNB can issue an order. In both cases, it is required to give both the SFBC and the operator an opportunity to put forward their views.

Conclusion

Consistent, risk-oriented oversight is ensured by enshrining the SNB's role as overseer in the National Bank Act and setting disclosure obligations and specific minimum requirements for the operators of systemically important payment and securities settlement systems in the National Bank Ordinance. The new framework places oversight on a more transparent and accountable basis. At the same time, it enhances the SNB's ability to influence financial market infrastructure and thus contributes to preserve the stability of the Swiss financial system.

3 SIS x-clear

The central counterparty SIS x-clear AG (x-clear) started operating on 5 May 2003. A central counterparty is a person or institution that acts as an intermediary between two parties that conclude a financial market transaction. It thus acts as the buyer for every seller and the seller for every buyer. For example, in a securities transaction the central counterparty undertakes the obligation to deliver securities to the buyer in exchange for money and to deliver money to the seller in exchange for securities. The main advantages of central counterparties are outlined in Box 5 (p. 42).

x-clear started operating without problems and rapidly gained high acceptance with participants using the electronic trading platform virt-x.⁶ x-clear is a wholly owned subsidiary of SIS Swiss Financial Services Group AG, which is owned by the Swiss banks.

Box 5: Central counterparties provide various advantages

By acting as an intermediary, a central counterparty offers a number of advantages to participants. The existence of a central counterparty eliminates the counterparty risk involved in transactions with unknown market participants by ensuring that participants do business with a single known counterparty. This is particularly significant for electronic trading platforms where participants cannot select their counterparties or do not necessarily know their identity (pre-trade anonymity). Moreover, a central counterparty ensures the anonymity of counterparties even after conclusion of a trade (post-trade anonymity). It normally also allows settlement netting. Finally, in x-clear's case it enables Swiss banks to participate on the electronic trading platform virt-x under Swiss law, without having to become members of the London Clearing House (LCH), which operates under English law.

While a central counterparty eliminates the counterparty risk between participants, it implies that the risks are concentrated at the central counterparty. Although high exposures can be avoided by netting, these risk concentrations mean that risk management is extremely important for central counterparties. Above all, risk management must prevent a domino effect (systemic risk) in the event of non-performance by a system participant. Central counterparties therefore use a variety of instruments to minimise these risks, for example, membership requirements, margin requirements, default funds and equity.

⁶ Virt-x is an electronic trading platform for pan-European blue chips that aspires to significantly reduce the costs associated with cross-border transactions.

A new element in the Swiss value chain

The main idea behind the Swiss value chain is to offer financial market participants a set of electronically interlinked systems that allow safe and efficient trading, clearing and settlement of securities transactions without any interruption in processing.

Before the introduction of x-clear, the Swiss value chain, which goes back to 1995, comprised three elements: the trading platforms virt-x and SWX Swiss Exchange, the securities settlement system SECOM and the payment systems Swiss Interbank Clearing (SIC) and euroSIC. The central counterparty x-clear, which is situated between virt-x and SECOM, has now been added to this value chain.

SNB is responsible for oversight of x-clear, in close cooperation with SFBC

In consultation with the SNB, the Swiss Federal Banking Commission (SFBC) granted x-clear a banking licence by its order of 19 March 2003. Given the specific nature of its operations as a central counterparty, x-clear has been exempted from certain regulatory requirements. By contrast, a special near-real-time, risk-based reporting system has been imposed. x-clear's risk management is examined in detail at regular meetings of x-clear, the SFBC and the SNB and any necessary adjustments are discussed.

The new National Bank Act, which came into effect on 1 May 2004, has given the SNB a clear mandate to oversee systemically important securities clearing and settlement systems (see Section 2). Since it may be assumed that x-clear meets the criteria for a systemically important system, the SNB will be overseeing x-clear in close cooperation with the SFBC.

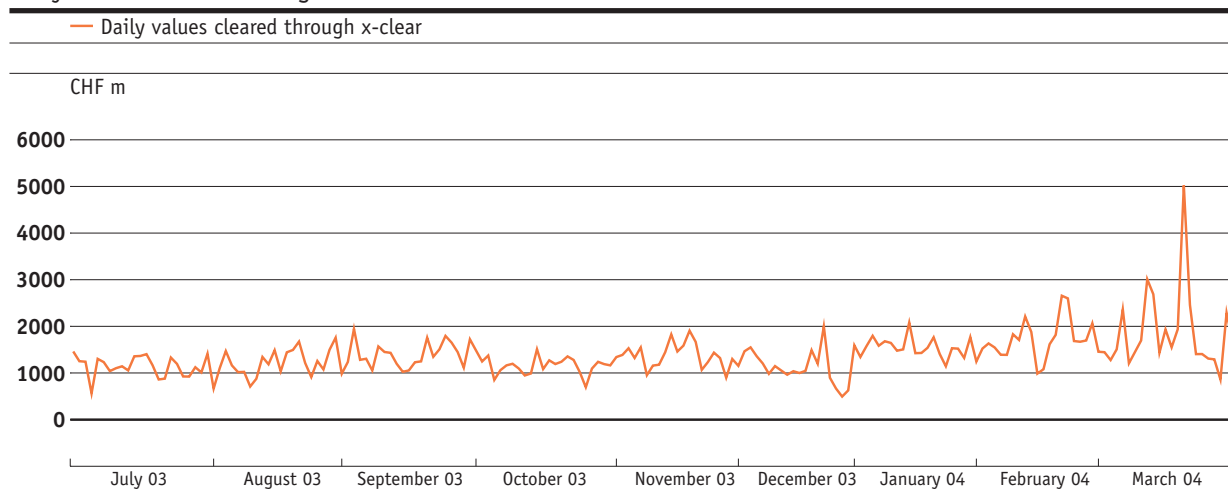
Rapid gain in market share

In the first quarter of 2004, the average daily value cleared through x-clear was CHF 1.7 billion (see Chart 24). The variations in daily value reflect fluctuations in trading activity on virt-x. x-clear's share of turnover on virt-x has remained constant since it started operating and was around 55% in the first quarter of 2004. Almost half of the value handled by x-clear came from trades where one counterparty was a member of x-clear and the other was a member of the London Clearing House (LCH). This indicates the importance of the link between x-clear and LCH. About 20% of value on virt-x comes from trades where both parties are members of LCH.

In the first quarter of 2004, an average of 12,500 transactions per day were cleared through x-clear by both parties and an additional 21,500 transactions were cleared between x-clear and LCH. x-clear's market share in terms of the number of transactions was around 55% and thus in line with its share in terms of value.

Daily values cleared through x-clear

Chart 24



Source: SIS x-clear AG

The settlement rate shows the proportion of transactions that x-clear was able to settle as scheduled on the anticipated settlement day. In 2003 it achieved a very high settlement rate of 99.91%. This figure rose to 99.97% in the first quarter of 2004. This was partly due to the automatic securities lending and borrowing system used by x-clear.

The number of institutions participating in x-clear has remained roughly constant since it started operating. Originally it had 51 individual clearing members (ICM), 6 general clearing members (GCM) and 14 non-clearing members (NCM). By end-March 2004 this had shifted slightly to 49 ICM and 8 GCM, with a sharp rise in NCM to 29.⁷

Adequate risk management is crucial

x-clear's risk management is vital for the stability of the financial system. It comprises four instruments: minimum requirements for system participants, a margin mechanism, a default fund, and equity (including retained earnings). In agreement with the SFBC and SNB, it was decided not to implement an additional insurance solution. The two most important instruments of daily risk management – margins and the default fund – are outlined below.

The *margin mechanism* comprises three components: initial margins, margin calls and variation margins. Every member must deposit a margin of 5% of its net position in cash or specific securities (to which a haircut is applied) after each trade (initial margin). This is multiplied by a risk coefficient reflecting the member's credit standing. Open positions are recalculated continuously to take account of any fluctuations in price between conclusion of the trade and the settlement day. If a certain tolerance limit is exceeded, a margin call is triggered and the member must provide additional collateral (variation margin) within an hour. Failure to meet a margin call by the next trading day results in automatic exclusion from the clearing process. A new method of calculating margins based on a value-at-risk concept is currently being established. This will provide a better reflection of risks.

Participants to x-clear also have to provide collateral for the *default fund*. If a member defaults, its margins will be used first, followed by its share of the default fund. The other members bear joint liability for any remaining loss. The contribution to the default fund calculated for each member depends on two factors: the type of membership (GCM or ICM) and its average net exposure. In March 2004 x-clear's default fund was CHF 334 million.

The basic principles of these precautions correspond to the mechanisms used by other central counterparties. A consultative paper published by the CPSS and IOSCO in March 2004 proposes various risk management standards for central counterparties.⁸ These include a recommendation that a central counterparty should maintain sufficient financial resources to withstand a default by the participant to which it has the largest exposure in extreme but plausible market conditions. The requirements set for systemically important central counterparties in the National Bank Ordinance go beyond this. They stipulate that a central counterparty must be able to withstand even the default by the *two* participants to which it has the largest exposures.

To test the efficacy of x-clear's risk management under extreme but plausible market conditions, a stress scenario has to be defined. For this purpose, possible extreme but plausible market conditions are defined as a 25% rise in share prices within a day (in the case of short positions) or a 25% fall in share prices (in the case of long positions). Comparing x-clear's risk positions and the risk management measures with this scenario shows that – with one single exception in March 2004 – x-clear would have been able to cope with the default by the two participants to which it has the largest exposures at all times since it started operating, without any impairment to its capital or reserves. The sum of the two largest exposures less the margins deposited was (with the one exception mentioned) always below the default fund. In the sole exception to this, the SFBC and SNB were notified immediately, as required in such cases, and the positions were scaled back through regular settlement operations. Chart 25 shows the potential losses of the *five* largest risk positions assuming a 25% rise (fall) in short (long) positions, less the margins deposited, versus the default fund. The exceptionally high positions in March 2004 can be seen clearly.

7 An ICM may only settle its own transactions via x-clear, whereas a GCM can also settle transactions for other financial intermediaries who are not members of x-clear (non-clearing members).

8 See CPSS (March 2004), No. 61, "Recommendations for Central Counterparties", www.bis.org.

x-clear reduces systemic risk

x-clear has reduced the counterparty risk of participants using virt-x while guaranteeing anonymity. At the same time, settlement netting enables it to reduce the total outstanding risk positions. However, these advantages have to be seen against the clustering of operational as well as credit and liquidity risks. In view of this, x-clear has taken various steps to manage risk.

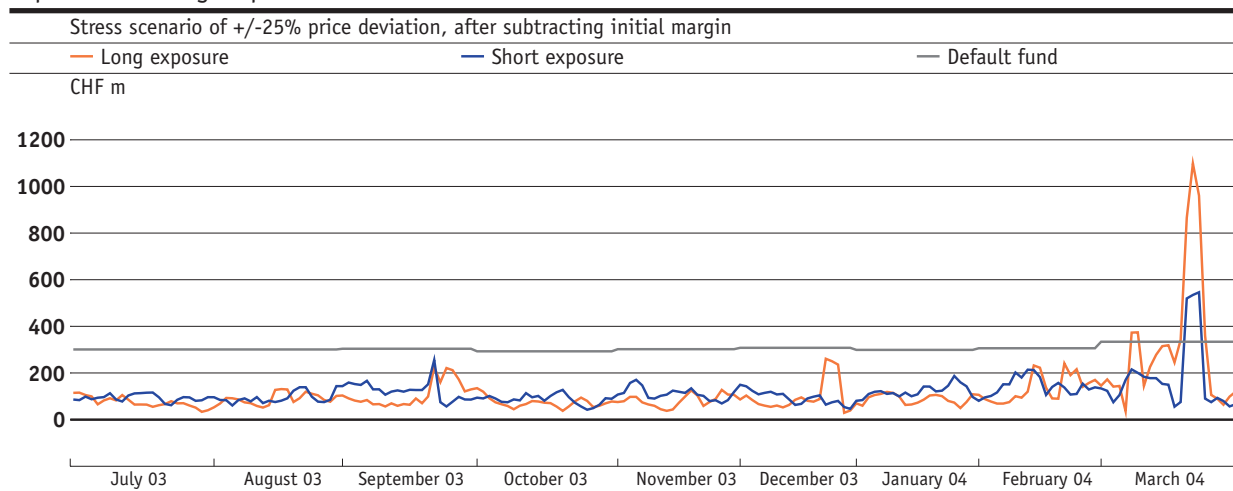
Since it started operating in May 2003 x-clear has proven very reliable. This is evidenced, inter alia, by its constantly high settlement rate. Moreover, even exceptionally high positions and sharp declines

in the price of individual securities did not impair the functioning of x-clear in this period. The assessment relative to various stress scenarios also shows that risk management is designed to ensure that x-clear would be able to meet its obligations at virtually all times, even in the unlikely event of the simultaneous default of the two members to which it has the largest exposure.

Accordingly, the establishment of x-clear and its rapid acceptance by market participants has reduced systemic risk and should therefore be welcomed as contributing to the stability of the financial system.

Exposure of 5 largest positions in stress scenario

Chart 25



Source: SIS x-clear AG

4 Continuous Linked Settlement (CLS)

The multi-currency payment system Continuous Linked Settlement (CLS) started operating in September 2002. CLS allows simultaneous settlement of both sides of a foreign exchange transaction on a payment versus payment basis and thus eliminates the risk that one party would deliver the currency it has sold without receiving the currency it has bought (principal risk). This risk arises in conventional settlement of foreign exchange transactions because settlement of the two sides is not coordinated, i.e. takes place at different times in different payment systems.

At the heart of CLS is CLS Bank, a financial institution whose sole purpose is to provide settlement for payment instructions arising from foreign exchange transactions.⁹ Owned by 69 of the world's largest financial institutions, CLS Bank is organised under the law of the United States and regulated by the Federal Reserve Bank of New York. Oversight of CLS Bank is carried out in accordance with the principles of cooperative oversight set out in the Lamfalussy Report.¹⁰ Accordingly, in its role as lead overseer, the Federal Reserve Bank of New York consults with other central banks whose currencies are integrated in CLS, including the Swiss National Bank.

Participants and eligible currencies

As at the end of March 2004, 56 settlement members, including three Swiss banks – Credit Suisse First Boston, UBS and Zürcher Kantonalbank –, used CLS for direct settlement of their foreign exchange transactions. Most foreign financial intermediaries use one of these Swiss banks as a correspondent bank for their Swiss franc funding. Only three foreign banks act as self-clearers in Swiss francs. The CLS settlement and funding process is briefly described in Box 6 (p. 46).

Financial intermediaries can also use CLS indirectly as third parties. Third parties appoint a settlement member who assumes responsibility for settlement of their transactions. As at the end of March 2004, more than 120 financial intermediaries, including 27 from Switzerland, used CLS as third parties.

Alongside the seven currencies integrated into CLS when it started (Australian dollar, British pound, euro, Japanese yen, Canadian dollar, Swiss franc and US dollar), four further currencies were added in September 2003 – the Danish krone, Norwegian krone, Swedish krone and Singapore dollar. The pro-

posed inclusion of the Hong Kong dollar, Korean won, New Zealand dollar and South African rand by the end of 2004 will raise the number of currencies handled by the system to 15.

Box 6: The CLS settlement and funding process

All CLS settlement members have an account with CLS Bank. These accounts are composed of several sub-accounts: one for each currency. Foreign exchange transactions are settled by debiting the sub-account of the currency sold and simultaneously crediting the sub-account of the currency bought.

Settlement via CLS is a continuous process comprising pay-ins, the settlement of transactions via accounts at CLS Bank and pay-outs. Settlement members make payments into their accounts at CLS Bank in each currency in which they have a net short position, in other words, when sales exceed purchases. In currencies in which they have a net long position, they receive pay-outs from CLS Bank. Funding, i.e. pay-ins and pay-outs, takes place via the national real-time gross settlement (RTGS) systems. CLS Bank is linked to these systems as a direct member. If a settlement member does not participate in the relevant RTGS system in a given currency, it can use a correspondent bank for its pay-ins and pay-outs.

While transactions are settled on a gross individual basis, funding takes place on a net basis. This reduces the total liquidity required to settle foreign exchange transactions. However, settlement members also have to comply with a specified pay-in schedule which defines how much they have to pay into CLS Bank in each currency and the deadline for these payments. As a general rule, net short positions have to be covered by five hourly pay-ins between 7 a.m. and 12 noon Central European Time.

Steady growth in transaction volumes and values

Transaction volumes and values settled by CLS have risen steadily since it started operating (see Chart 26). In the first quarter of 2004 the system settled an average of 125,000 instructions valued at USD 1,285 billion. The peak was 263,000 instructions valued at USD 2,175 billion in one day.¹¹

The instructions settled in Swiss francs have risen in line with this (see Chart 27). In the first quarter of 2004, an average of 6,400 instructions valued at CHF 67 billion were settled.

The overriding importance of the US dollar on the foreign exchange market is reflected in both transaction value, which accounts for 46% of total transaction value, and the fact that it accounts for more than 80% of all instructions settled via CLS. The Swiss franc accounts for 5.2% of total transaction value, ranking fifth after the US dollar, euro, yen and pound.

9 Operational and back-office support to CLS Bank is provided by CLS Services, a limited company incorporated under English law. Both CLS Bank and CLS Services are wholly owned subsidiaries of CLS UK Intermediate Holdings Ltd, a shell company from a governance perspective, which itself is a wholly owned subsidiary of CLS Group Holdings AG, a company incorporated under Swiss law.

10 See BIS (1990), "Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries" (Lamfalussy Report), www.bis.org.

11 Volume figures report the number of settled instructions. Each foreign exchange transaction implies two instructions, one for the currency sold and one for the currency bought. Moreover, transactions of high value (more than USD 100 million) are split into smaller parts in order to improve settlement efficiency.

Effective risk management eliminates principal risk and reduces liquidity risk

In view of the extremely high trading volume on the foreign exchange market, conventional settlement of such transactions involves considerable principal risks. In a report published in 1996,¹² the BIS identified this as a risk to both the solvency of individual banks and the stability of the financial system, and called on the banking industry to develop settlement procedures that would reduce principal risk. CLS can be seen as a response to this, because simultaneous settlement of both sides of a foreign exchange transaction tackles the problem at its roots.

CLS Bank employs a sophisticated combination of risk management tools that makes it possible to eliminate principal risk and reduce liquidity risk.¹³ Risk management is designed such that for trades settled through CLS a party will either receive the currency it bought, or be refunded the currency it

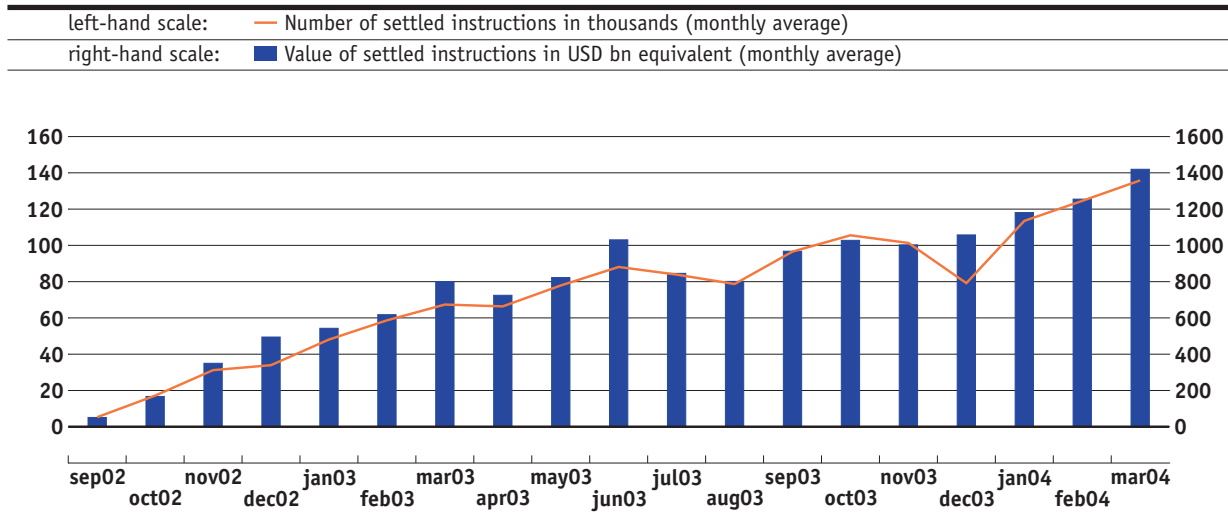
sold, even if the system participant with the largest single pay-in obligation is unable to settle. Moreover, risk management protects CLS Bank *itself* against credit and liquidity risk in most foreseeable circumstances. Risk management tools include, among others, membership requirements; a requirement to settlement members to maintain a positive overall account balance; haircuts for exchange-rate risk; currency-specific short position limits; and committed liquidity facilities. Only instructions that pass all of the CLS Bank’s risk controls will be settled through the system. To the extent that instructions remain unsettled, participants understand that they retain responsibility for managing any associated market, liquidity or principal risk.

Demanding intraday liquidity management

Although CLS reduces participants’ liquidity risk, it makes high demands on their intraday liquidity

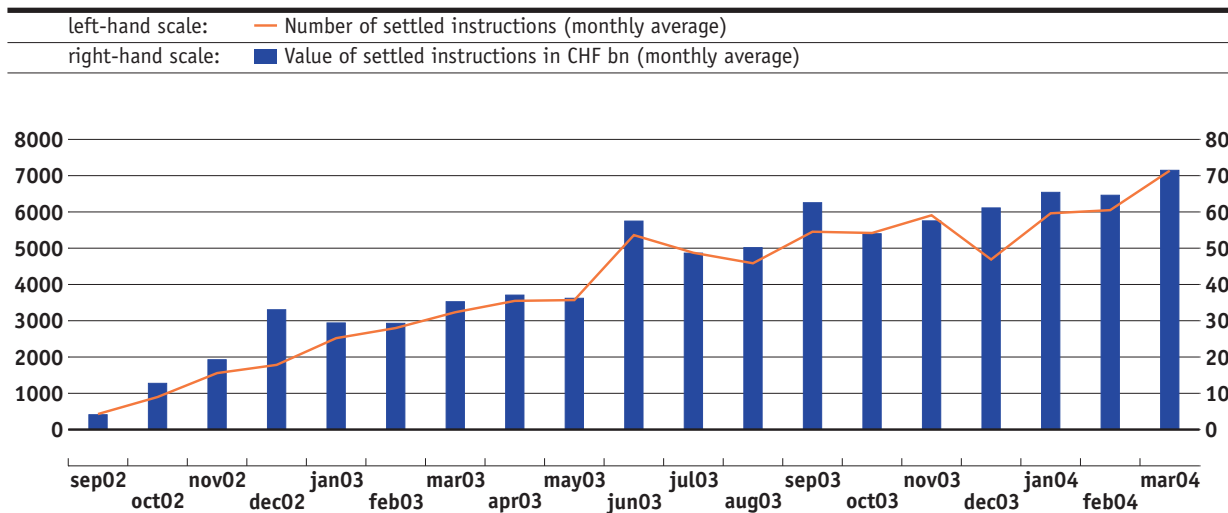
Transaction volumes and values in CLS

Chart 26



Transaction volumes and values of CHF transactions in CLS

Chart 27



12 See BIS (1996), “Settlement Risk in Foreign Exchange Transactions”, www.bis.org.

13 In the context of foreign exchange settlement, liquidity risk is the risk that a party will not receive the expected currency when due.

Charts 26 and 27: Source: CLS Bank

management. For instance, participants' liquidity management must guarantee timely settlement of time-critical pay-ins. That requires prioritisation and timely release of payments, monitoring of incoming payments and active collateral management to ensure access to intraday liquidity facilities at central banks.

To facilitate intraday liquidity management, the SNB provides interest-free intraday credits for members of the Swiss Interbank Clearing (SIC) system. These take the form of intraday repo trades via the electronic trading platform Eurex Repo which can be settled within a few seconds via the link between SIC and the securities settlement system SECOM. The six CHF clearing banks that make pay-ins to CLS Bank in Swiss francs – either as self-clearers or as correspondent banks on behalf of other settlement members – can deposit their intraday liquidity on a special SIC sub-account. This sub-account is used solely for payments to and from CLS Bank and prevents liquidity being used for other payments.

Chart 28 shows the use of the intraday liquidity facility in SIC since the start of 2001. This demonstrates quite clearly that the use of intraday liquidity by CHF clearing banks has increased significantly since the introduction of CLS. In the first quarter of 2004, the six CHF clearing banks together drew an average of CHF 3.8 billion in intraday liquidity per day. On most days, the intraday liquidity drawn by the CHF clearing banks actually exceeded their aggregate pay-in obligations, which averaged CHF 2.3 billion and peaked at CHF 4.3 billion during that period.¹⁴ The generous supply of intraday liquidity meant that CHF clearing banks had no trouble meeting their pay-in obligations on time.

Satisfactory technical and operational performance

Ensuring operational reliability and taking suitable precautions to withstand and respond to disruptions is a challenge that operators of systemically im-

portant financial market infrastructures have to take very seriously. The challenge facing CLS is particularly high because both technically and operationally this is a relatively complex system. Moreover, smooth operation depends on a large number of external factors and parties, including the various national RTGS systems.

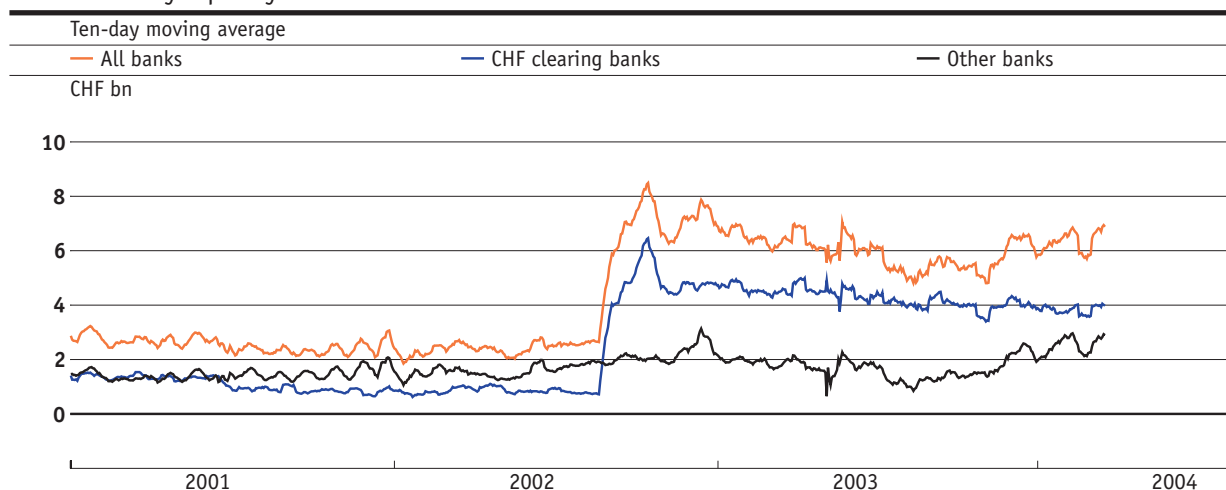
Taking into account these factors as well as the fact that maintaining a stable service is particularly challenging in the start-up phase, the technical and operational performance of CLS may be considered satisfactory. Although CLS has sporadically missed deadlines within its daily processing cycle due to various disruptions, it has generally been able to achieve scheduled settlement on time. However, there were two incidents of service disruptions that resulted in unsettled transactions. In both incidences, CLS Bank was able to achieve full service completion of funding and settlement including processing of the resubmitted instructions by the next day. Also, CLS's management responded appropriately to each of the disruptions and has actively sought to resolve the issues.

Positive impact on financial stability

Finally, with a view to the impact on the stability of the financial system it is important to consider whether CLS reduces systemic risk. At present the answer is that it does. By eliminating principal risk in the settlement of foreign exchange transactions it greatly reduces systemic risk. It would therefore be desirable for a large number of market participants to start using CLS for their foreign exchange transactions as soon as possible. However, it should also be noted that CLS is a global financial market infrastructure which results in increasing complexity and interdependence. This gives rise to new risks, notably on the operating front. High priority therefore needs to be given to controlling these risks – for example, through ongoing improvements in contingency planning and preventive measures, both at CLS Bank and at all stakeholders.

Use of intraday liquidity in SIC

Chart 28



14 The maximum aggregate pay-in obligation in Swiss francs since CLS started operating was just under CHF 6.6 bn on 15 September 2003.

Chart 28: Source: SNB

