Payment, clearing and settlement systems in Switzerland

Contents

List of abbreviations

AHV/AVS	Swiss Old Age and Survivors' Insurance Fund
ATM	automated teller machine
BaFin	Bundesanstalt für Finanzdienstleistungsaufsicht (Federal Financial Supervisory Authority (Germany))
BIC	Bank Identifier Code
CCP	central counterparty
CLS	Continuous Linked Settlement
Comco	Swiss Federal Competition Commission
CSD	central securities depository
DMIF	domestic multilateral interchange fee
DVP	delivery versus payment
e-bills	electronic bills
EFTPOS	electronic funds transfer at the point of sale
ETF	exchange-traded fund
euroSIC	Swiss RTGS system in euros
FINMA	Swiss Financial Market Supervisory Authority
FISA	Swiss Federal Intermediated Securities Act
FX	foreign exchange
GCM	General Clearing Member
GDP	gross domestic product
GTCB	General Terms and Conditions of Business
IBAN	International Bank Account Number
ICM	Individual Clearing Members
ICSD	international central securities depository
ISIN	International Securities Identification Number
LSE	London Stock Exchange
MTF	multilateral trading facility
NBA	National Bank Act
NBO	National Bank Ordinance
NCM	Non-Clearing Member
PIN	personal identification number
POS	point of sale
ROCH	Recognised Overseas Clearing House
RTGS	real-time gross settlement
SARON	Swiss Average Rate Overnight

SECB	Swiss Euro Clearing Bank
SECOM	Settlement Communication System
SEPA	Single Euro Payments Area
SIC	Swiss Interbank Clearing
SNB	Swiss National Bank
SPC	Swiss Payments Council
SSS	securities settlement system

Introduction

At the beginning of 2008 three of the major Swiss collaborative financial market infrastructure providers[1] merged into SIX Group Ltd. It is owned by approximately 160 domestic and foreign banks, which are also the main users of the infrastructures. Consequently, SIX Group Ltd is the predominant player in offering financial market infrastructure services in Switzerland. Through various subsidiary companies it operates the SIX Swiss Exchange (the exchange for Swiss equities, bonds and exchange-traded funds) and the following payment, clearing and settlement systems: Swiss Interbank Clearing (real-time gross settlement (RTGS) system), SIX x-clear Ltd (the central counterparty) and SECOM[2] (the securities settlement system). Other companies belonging to SIX Group Ltd are dominant players in the card issuing, acquiring and processing business.

Swiss Interbank Clearing (SIC),[3] the RTGS system for Swiss francs, is operated by SIX Interbank Clearing Ltd on behalf of the Swiss National Bank (SNB). The SNB acts as a system manager and settlement agent, providing participants with accounts in central bank money and with liquidity facilities. SIC settles large-value payments including those related to the SNB's monetary policy operations. It is also the main retail payment system.

SIX x-clear Ltd (x-clear) is the only central counterparty domiciled in Switzerland. It is licensed as a bank and currently provides clearing for securities traded on SIX Swiss Exchange, on the London Stock Exchange and on multilateral trading facilities (MTFs) such as UBS MTF and Equiduct.

SECOM, the securities settlement system, is operated by SIX SIS Ltd (SIS), which is also the central securities depository (CSD). SIS is licensed as a bank. It provides for the custody and settlement of tradable financial instruments in Switzerland and as global custodian offers its participants access to over fifty foreign financial markets.

Besides x-clear there are two non-domestic central counterparties (CCPs) that are relevant for Switzerland: the UK-based London Clearing House, which clears financial instruments traded on SIX Swiss Exchange, and the German-based Eurex Clearing, which provides CCP clearing services for derivatives based on Swiss underlying assets.

Moreover, an important component for the Swiss payment infrastructure is Continuous Linked Settlement (CLS), the international foreign exchange (FX) settlement system managed by the New York-based CLS Bank International. CLS settles FX trades in 17 currencies including the Swiss franc.

The SNB and the Swiss Financial Market Supervisory Authority (FINMA) are the authorities endowed with regulatory functions related to the payment, clearing and settlement infrastructure in Switzerland. FINMA, as the prudential regulatory authority, supervises those entities that are licensed as banks.[4] The SNB oversees all payment, clearing and settlement systems. Those systems that are important to the stability of the Swiss financial system are subject to minimum requirements. In its oversight function the SNB cooperates with FINMA and also with the relevant foreign regulatory authorities. The SNB has designated the following systems as important for the stability of the Swiss financial system: SIC, x-clear, LCH.Clearnet Ltd, Eurex Clearing, SECOM and CLS.

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1 SWX Stock Exchange, Telekurs Group and SIS Group.

2 SECOM stands for Settlement Communication System.

3 Although the SIC system carries the word "clearing" in its name, it is in fact a payment system providing final settlement for payments in real time and on a gross basis.

4 In the case of payment, clearing and settlement systems this applies to SIX x-clear Ltd and SIX SIS Ltd, which are both registered as banks with a tailor-made banking licence.

In the field of retail payments, in addition to the services provided by commercial banks, PostFinance has for historical reasons also been a major provider and processor. It offers the entire range of payment services and instruments and settles most transactions through its own network and payment system. PostFinance does not hold a banking licence.

The overwhelming majority of cashless payments in Switzerland take the form of credit transfers. Direct debit schemes exist but have been considerably less important. Cheques and e-money, which have both never been significant payment instruments, have declined in use over recent years. In contrast, payment cards, both credit and debit cards, have substantially gained in popularity in the last decade. While there have been some launches of innovative payment instruments in Switzerland in recent years, including contactless and prepaid payment cards, mobile phone payment instruments and solutions for payments in e-commerce, they have all remained on the fringes of popularity.

1. Institutional aspects

1.1 The general institutional framework

1.1.1 Institutions

The ***Swiss National Bank*** is Switzerland's central bank. The constitutional basis for its activity is contained in Article 99 of the Federal Constitution, which empowers the SNB, as an independent central bank, to pursue a monetary policy that serves the country as a whole. The National Bank Act (NBA) of 3 October 2003 (in force since 1 May 2004) serves as the statutory basis for the SNB and its activities. The NBA sets out in detail the SNB's mandate, its tasks and its sovereign instruments. Besides ensuring price stability, the SNB shall – among other tasks – facilitate and secure the operation of cashless payment systems and shall contribute to the stability of the financial system. Oversight of payment and securities settlement systems is one of the instruments to contribute to financial stability and is outlined in Articles 19–21 NBA (for details see Section 1.2.1).

The ***Swiss Financial Market Supervisory Authority*** has sovereign authority over banks, insurance companies, stock exchanges, securities firms and collective investment schemes. It operates based on the principles of the Federal Act on the Swiss Financial Market Supervisory Authority. FINMA grants operating licences for companies and organisations subject to its supervision. Moreover, it is responsible for combating money laundering and, where necessary, conducts financial restructuring and bankruptcy proceedings. Through its supervisory activities, FINMA also ensures that the supervised institutions comply with the requisite laws, ordinances, directives and regulations and continue at all times to fulfil licensing conditions. Consequently, operators of payment, clearing and securities settlement systems that are licensed as banks are subject to FINMA's prudential supervision.

1.1.2 Legal framework

Under Swiss law, no comprehensive and uniform set of rules governing payment systems or securities clearing and settlement systems has been enacted. The legal framework in Switzerland for the operation of payment, securities clearing and settlement systems consists of contractual arrangements under private law among the various participants involved, supplemented by the systems' technical regulations. These contracts are based on the general principles of the Civil Code and the Code of Obligations. Furthermore, finality issues are governed by the Banking Act, the Code of Obligations and the Federal Intermediated Securities Act (FISA).[5] Finally, conflict of laws issues are governed by the Swiss Private International Law Act and the respective international treaties.[6]

Moreover, payment and securities settlement systems are overseen by the SNB. Systems that are designated as systemically important have to meet minimum requirements as stipulated in the NBA and the National Bank Ordinance (NBO).[7] The CCP x-clear and the SSS operator SIS – both subsidiary companies of SIX Group – are registered as banks (with a tailor-made banking licence[8]) and are therefore subject to prudential supervision by FINMA based on the Banking Act[9] and related decrees (for details on x-clear and SIS see Sections 4.3 and 4.4).

SIX Interbank Clearing Ltd, the operator of the Swiss RTGS system SIC, is a private corporation[10] established in Switzerland and governed by Swiss company law.[11] It is a subsidiary company of SIX Group and does not have banking status (for details see Section 3.2).

Besides SIX Group, PostFinance – the financial branch of Swiss Post – is another dominant player in the area of payment infrastructure, particularly in retail payments and retail payment instruments. PostFinance is not licensed as a bank and is governed by the regulations in the Postal Act.[12]

1.2 The roles of the Swiss National Bank

1.2.1 Oversight

The NBA serves as the statutory basis for the SNB and its activity and sets out in detail the SNB's constitutional mandate. In particular, with the revision of the NBA in 2004 the SNB has been given the explicit statutory mandate to oversee payment and securities clearing and settlement systems as outlined in Articles 19–21 NBA. These articles govern the purpose and scope, features and processes of oversight as well as the cooperation with other authorities. The NBA specifies that the oversight function is designed to protect the stability

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5 Details on finality of payments and securities transactions are provided in the respective sections below (3.2.1 and 4.3.1.1).

6 European Union/European Economic Area law and directives (including those related to payment, clearing and settlement systems) are not applicable in Switzerland as Switzerland is a member neither of the EU nor of the EEA.

7 The NBA and NBO are available at http://www.snb.ch/en/iabout/snb/legal/id/snb_legal_law. According to the Swiss Constitution, the Federal Assembly of the Swiss Confederation is empowered to pass and amend the NBA. In the drafting process, the SNB is invited to provide its opinion. Reviews and amendments occur when deemed necessary. Based on Article 15 para 3, Article 17 para 2, Article 18 para 5 and Article 20 para 3 NBA the SNB is empowered to issue, to review and to amend the NBO. There are no formal provisions as to the periodicity for reviews.

8 FINMA has stipulated some additional provisions to the Banking Act and some exceptions from provisions in the Banking Act to align licensing requirements with the special purpose activities of these financial market infrastructures.

9 Swiss Federal Act on Banks and Savings Banks: www.swiss-banking-law.com/en/files/KPMG_Swiss_Federal_Act_on_Banks_and_Savings_Banks.pdf.

10 Joint-stock company ("Aktiengesellschaft" / "société anonyme").

11 See Articles 620 et seq of the Swiss Code of Obligations.

12 As a non-bank, PostFinance is currently not supervised by FINMA. However, there are endeavours to subject PostFinance to FINMA's supervision, which would simplify PostFinance's current complex regulatory supervision arrangements.

of the financial system. The sole objective of system oversight by the SNB is to ensure financial stability, which in turn is a precondition for the effectiveness of monetary policy. Consequently, individual creditor and consumer protection or the protection of payment and securities settlement systems from criminal abuse are not objectives of the SNB's oversight. The detailed stipulations governing oversight are laid down in the NBO.

As stipulated in the NBA and NBO, the SNB follows a three-level regulatory approach in implementing oversight. Firstly, all system operators are required to provide statistical information. Secondly, all securities settlement systems and those payment systems settling more than CHF[13] 25 billion annually become subject to the disclosure obligation. Based on the acquired information the SNB evaluates if a system qualifies as systemically important pursuant to the criteria identified in Article 20 NBO, which are: types of transactions, value and number of transactions, group of participants, currencies cleared or settled, links between systems and available alternatives. By definition, systemically important systems have the potential to either trigger or transmit systemic risks across the financial system, hence compromising financial stability. Thirdly, operators of systems that pose a risk to the stability of the financial system become subject to minimum requirements.

The SNB has classified the following systems as important for the stability of the Swiss financial system: Swiss Interbank Clearing (RTGS), SECOM (SSS), x-clear (CCP), LCH.Clearnet Ltd (central counterparty), CLS (foreign exchange settlement system) and Eurex Clearing (central counterparty). Systemically important non-domestic systems are exempt from meeting minimum requirements if they are subject to equivalent oversight by a foreign authority which cooperates with the SNB (see Section 1.2.2).

The SNB's mandate to oversee payment systems also extends to retail payment systems. However, as the SNB's oversight aims at protecting the stability of the financial system, the focus of the SNB's oversight activities is primarily on systemically important systems. None of the systems in Switzerland established for transacting, processing or settling retail payments have been designated as systemically important. Thus, minimum requirements do not apply. Nevertheless, the SNB monitors retail payment systems as well as trends and developments in retail payments more generally, relying on the statistical reporting duty along with publicly available information of all kinds.

1.2.2 Cooperation with other institutions

As overseer

Article 21 NBA governs the provisions for the cooperation between the SNB and other domestic and foreign authorities. Domestically the SNB cooperates closely with FINMA. Coordination between the two authorities is especially necessary when a system operator is also licensed as a bank and is thus subject to prudential supervision. Moreover, the NBO requires the SNB to consult with FINMA before determining that a payment or securities settlement system is systemically important.

In the light of the increasing internationalisation of financial market infrastructures, the SNB – in its role as overseer – depends on strong cooperation with foreign authorities. The willingness of a foreign authority to cooperate with the SNB is a precondition for systemically important non-domestic systems to be exempt from complying with the SNB's minimum requirements. The SNB can share non-public information and documents regarding system operators with foreign supervisory or oversight authorities provided that these authorities use such information

[13] At year-end 2009, CHF 1.00 was worth USD 0.97.

exclusively for directly supervising or overseeing such systems or participants in such systems and are bound by official or professional secrecy.

Regarding CLS, the SNB is part of a cooperative oversight group with other central banks under the lead of the Federal Reserve Bank of New York.[14] In the case of the two non-domestic CCPs LCH.Clearnet Ltd (LCH.Clearnet) and Eurex Clearing, the SNB cooperates with the relevant UK and German authorities. In addition, due to increasing cross-border activities and interoperability of the systemically important domestic CCP, x-clear, the SNB also cooperates with other relevant foreign authorities such as those in the United Kingdom, Denmark, Finland, Sweden and the Netherlands. Typically oversight cooperation is governed by Memoranda of Understanding.

As catalyst

The cooperation of private and public institutions in the area of payments, clearing and settlement has a long tradition in Switzerland. Various standing committees examine relevant issues of the Swiss financial market infrastructure involving the major players: banks, PostFinance, SIX Group and the SNB.[15] The cooperative approach allows for developing and implementing common standards that facilitate competition on payment services while not compromising industry-wide efficiency and interoperability. In these committees, the SNB takes part mostly as a member on a par with the others. The SNB rarely takes the lead, yet it reserves the right to provide clear guidance when any development in the area of financial market infrastructure could jeopardise its mandate.

1.2.3 Operational role

Since 1987 SIC, Switzerland's RTGS system, has been operated by SIX Interbank Clearing Ltd on behalf of the SNB, while the SNB acts both as the system's manager and the settlement agent. SIX Interbank Clearing Ltd is owned by its users: SIX Group (ie the Swiss banks, 75% ownership of SIC) and PostFinance (25% ownership). The SNB has one representative on the board of directors of SIX Interbank Clearing Ltd. The stipulations governing the responsibilities and duties of the relationship between the SNB and SIX Interbank Clearing Ltd are laid down in a contract. SIX Interbank Clearing Ltd operates and maintains the processing centres, develops and maintains the software and manages the data files, and defines the organisational and administrative rules of conduct in SIC and maintains the communication and security installations. As the system's manager the SNB lays down the conditions for access and exclusion from the SIC system, initiates beginning and end-of-day procedures and is in charge of crisis management (see Section 3.2 for details on SIC).

1.2.4 Provision of payment and settlement services

Provision of sight deposit accounts

Article 9 of the NBA empowers the SNB to keep sight deposit accounts for banks and other financial market participants as part of its mandate to pursue its monetary tasks. These sight deposit accounts are used for transactions with the SNB as well as for cash deposits and cash withdrawals and are a precondition for participation in the SIC system. Account

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[14] The *Protocol for the Cooperative Oversight Arrangement of CLS* is downloadable from the website of the US Federal Reserve.

[15] A number of relevant committees are also hosted by the Swiss Bankers Association (see Section 1.3.6).

maintenance is free of charge and the balances are non-interest bearing. At the end of 2010, there were 491 sight deposit accounts with the SNB.

The SNB defines the criteria for opening a sight deposit account and for accessing the SIC system.[16] Admitted participants are, in principle, professional financial market participants and are subject to regulatory supervision with regard to the combating of money laundering and of terrorism financing. Also, participants have to have an adequate technological infrastructure to exchange payment information with the SNB. Foreign institutions are also admitted provided that they are domiciled in a politically and economically stable country based on the rule of law and are subject to equivalent regulatory and supervisory standards. The SNB opens sight deposit accounts for domestic and foreign banks, Swiss Post, insurance companies, domestic cash processing operators, clearing and settlement organisations, public entities, foreign central banks and international organisations.

Provision of credit facilities

The SNB provides liquidity to market participants via open market operations, intraday credits and the liquidity-shortage financing facility. All domestic banks with sight deposits at the SNB are in principle admitted as counterparties for the SNB's monetary policy operations. Other domestic and foreign financial market participants may be admitted as counterparties for monetary policy operations provided that their admission serves monetary policy interests, the participants contribute to the liquidity of the secured Swiss franc money market, and they meet the requirements for opening a sight deposit account (see paragraph above).

All credit facilities offered by the SNB are based on repurchase agreement (repo) transactions. To obtain access to the repo market in Swiss francs candidates must be admitted to the SIC system and to SECOM, and meet the conditions for participation in the Swiss franc repo market.[17] Only high-quality securities are accepted by the SNB as collateral for repo transactions. The SNB defines the specificities.[18]

Standing facilities

While the SNB takes the initiative in open market operations, intraday liquidity and the liquidity-shortage financing facility are standing facilities at the disposal of the counterparties. With standing facilities, the SNB only specifies the conditions on which liquidity can be obtained.

Market participants can draw interest-free ***intraday liquidity*** from the SNB to alleviate their possible liquidity challenges in the SIC system, for instance in case of time-critical pay-ins into CLS. All the liquidity obtained through the intraday liquidity facility has to be repaid in full by the closing of the settlement day. Intraday liquidity is provided on the basis of repo transactions. At all times the collateral provided by the counterparties has to cover at least 110% of the liquidity drawn. To qualify for intraday liquidity, counterparties have to meet the conditions for participation in the Swiss franc repo market.

The SNB provides a ***liquidity-shortage financing facility*** to bridge unexpected, short-term liquidity bottlenecks. Liquidity-shortage financing is commonly drawn when required funding

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16 For details on access criteria to the SIC system, see "Instruction sheet on cashless payment transactions", available at www.snb.ch.

17 Conditions for participation in the repo market include meeting both the access criteria to Eurex Zurich Ltd as well as the general terms and conditions of the SNB on repo transactions.

18 For details on eligible collateral, see "Instruction sheet on collateral eligible for SNB repos" and for a regularly updated list see "List of collateral eligible for SNB repos", both available at www.snb.ch.

cannot be obtained quickly enough in the interbank market or minimum reserve requirements cannot be ensured at the end of the reporting period. The facility is made available through repo transactions at a special rate (currently 50 basis points above the call money rate[19]). All counterparties wishing to draw on the liquidity-shortage financing facility have to fulfil the conditions for participation in the repo market in Swiss francs. Moreover, a prerequisite for using the facility is the granting of a limit by the SNB of the maximum amount of liquidity that can be drawn. At all times, counterparties have to pre-pledge SNB-eligible collateral at 110% of the defined limit in a separate custody account. During the day, these pre-pledged securities may also be used for obtaining intraday liquidity.

Banker to the Confederation

As stipulated in the NBA[20] the SNB may provide banking services to the Swiss Confederation.[21] Bilateral agreements between the SNB and the individual federal and associated enterprises govern the details of these business relationships. The SNB conducts a part of the Confederation's payment transactions (mainly cross-border and large-value payments), performs its liquidity management, holds its securities in safe custody, invests federal funds, issues money market debt register claims and Confederation bonds, and conducts foreign exchange transactions.[22]

The NBA prohibits the SNB from granting the Confederation loans or overdraft facilities and buying government bonds from new issues. However, the SNB may grant the Confederation intraday account overdrafts against sufficient collateral.

1.3 The role of other private and public institutions

1.3.1 PostFinance

Historically, the Swiss Postal Administration has been the dominant institution in payment services. As early as 1906 Swiss Post received authorisation to open accounts for any firm or private individual. Various payment transactions such as cashless transfers, cash deposits and payouts could be carried out on these postal accounts. The Postal Administration's network of post offices throughout Switzerland provided the necessary infrastructure. The tight network of post offices in Switzerland and Swiss citizens' widespread account ownership with Swiss Post contributed to the development of a payment culture based on credit transfer instruments rather than debit transfer instruments. As almost every citizen had access to a post office within walking distance for bill payment and almost every company had an account with Swiss Post (now PostFinance), there was little necessity for debit instruments such as cheques to be promoted in Switzerland. As a consequence, cheques have always been of marginal significance.

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[19] The reference rate for the call money rate is the SARON (Swiss Average Rate Overnight) 12:00 noon fixing of the current bank working day.

[20] Article 5, para 4 and Article 11 NBA.

[21] Background information regarding the SNB's role as banker to the Confederation over time along with the reasoning behind the changes in the remuneration policy for providing its services can be found in: SNB commemorative publication 2007 *The Swiss National Bank, 1907–2007*. Zurich: Verlag Neue Zürcher Zeitung, pp 544–6.

[22] The SNB's banking services to the Confederation were offered free of charge prior to the revision of the NBA in 2004. With the new NBA the SNB was no longer compelled to provide services to the Confederation unconditionally but could negotiate terms as an equal partner. Accordingly, the new NBA stipulates that banking services to the Confederation are provided for adequate compensation. However, services rendered to facilitate the implementation of monetary policy remain free of charge.

Nowadays PostFinance (Swiss Post's financial services branch) remains a prominent provider in the area of retail payments and of retail instruments. The Swiss Post continues to have a legal mandate to provide sufficient coverage for payment services in all parts of the country. In 2009 it had a network of 2,348 post offices and PostFinance maintained over 3.8 million accounts, settling 865 million transactions.

1.3.2 Banks

While PostFinance has been present in the retail area for more than a century now, in 1949 the big Swiss banks founded their own giro organisation, the "Bank Clearing". Most other banks joined this clearing arrangement in the subsequent years. In 1981 responsibility for the administrative and technical operation of this clearing system was assigned to Telekurs Ltd (today's SIX Interbank Clearing Ltd), a joint venture of the Swiss banks. Out of "Bank Clearing" emerged the Swiss RTGS system Swiss Interbank Clearing in 1987. In 2001 PostFinance also joined SIC. As a result of the foundation of SIX Group in 2008, SIX Interbank Clearing Ltd was put under the roof of SIX Group.

At the end of 2009 there were in total 325 banks in Switzerland with 2,639 branches or offices. Most banks offer the full range of banking services including payment services and a wide variety of payment instruments. Typically payment services are not charged on a per transaction basis but are bundled and priced together with other bank account related services.

1.3.3 SIX Group

At the beginning of 2008 the three leading financial market infrastructure providers in Switzerland SWX Stock Exchange, Telekurs Group and SIS Group merged into one single holding structure named SIX Group Ltd. It is owned by approximately 160 domestic and foreign banks that are also the users of its infrastructures.[23] SIX Group now unites all components of the Swiss Value Chain[24] under the same roof. In addition to combining trading, clearing, payment and securities settlement, SIX Group offers many related services. These include the operation, regulation and monitoring of electronic exchange trading, the calculation of indices, the custody processes of securities, the distribution of reference and market data, and the operational processes related to issuing and accepting payment cards (credit, debit and prepaid cards). Additional services are the settlement of electronic bills as well as interbank payment transactions in euros. Moreover, the systemically important Swiss payment, clearing and securities settlement systems SIC (RTGS), x-clear (CCP) and SECOM (SSS) are operated by subsidiary companies of SIX Group Ltd.

1.3.4 Non-bank institutions

Besides the dominant players in the area of Swiss payment services – SIX Group, PostFinance and the banks – there is a presence of non-bank institutions providing services

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[23] At the end of 2009 the shareholders in SIX Group were the major Swiss banks (30.12%), foreign banks in Switzerland (22.68%), commercial and asset management banks (14.96%), cantonal banks (13.64%), private bankers (10.17%) and regional and Raiffeisen banks (4.09%). Other banks accounted for 1.23%. SIX Group and its companies held the remaining 3.11%.

[24] The Swiss Value Chain is the term used to describe the fully electronic integration of trading, clearing and settlement of shares, bonds, derivatives and structured products in Switzerland.

in the processing of retail transactions, in issuing and acquiring payment cards or in offering innovative payment products.[25]

1.3.5 Swiss Payments Council

SIX Interbank Clearing Ltd, the operator of SIC and provider of various other payment services, manages a number of committees established to coordinate interbank issues in the area of payments and settlements. These committees and related working groups aim at establishing or adopting national and international standards and provide concerted solutions for national and cross-border developments in the field of payments. The Swiss Payments Council (SPC) is the leading committee, consisting of the SIX Interbank Clearing Ltd's Board of directors, which itself is composed of representatives of all major Swiss players in the payments, clearing and settlement area, including the SNB. The SPC identifies and prioritises topics of significance for the Swiss financial centre related to payments on a national and cross-border level. It is authorised to decree guidelines in standardisation (development, introduction, adjustment or abolition of standards). Additionally, the SPC governs other Swiss payments sub-committees[26] and working groups, their structure, scope of work and guidelines.

1.3.6 Swiss Bankers Association

The Swiss Bankers Association is the leading professional organisation of the Swiss financial centre. Its main purpose is to maintain and promote the best possible business environment for the Swiss financial centre both domestically and abroad. It has close to 360 institutional members. Various committees and associated working groups deal with key issues affecting the industry, including matters related to the financial market infrastructure[27] as well as to business continuity. Representatives from various banking groups take part in these committees. The SNB is also represented in some committees.

1.3.7 Federal Competition Commission

The Swiss Federal Competition Commission (Comco) is an independent federal authority. Comco's objective is to protect competition by ensuring that private sector arrangements comply with the Act on Cartels.[28] In this capacity Comco monitors dominant companies for signs of anticompetitive behaviour, enforces merger control legislation, prevents the imposition of competition restraints by the state and above all combats harmful cartels. Contrary to the custom in other countries, in Switzerland it is the sole responsibility of Comco to address anticompetitive developments in the area of payments and instruments.[29]

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[25] For example; there are some firms in the card business – Arccarda, Aduno, Viseca, B&S Card Services, Concardis and others – without a banking licence. Also, sofortueberweisung.de offers an e-payments solution and vanilla.ch provides m-payments, while other organisations are active in the field of cross-border money transfer (eg Western Union, Moneygram).

[26] Such as Payments Committee Switzerland (PaCoS), Project and IT-Process Steering Committee (PAP), Rules and Regulations Committee (RAR). Background information on these committees can be found at www.sic.ch.

[27] Such as the Swiss Commission for Financial Standardisation.

[28] Bundesgesetz über Kartelle und andere Wettbewerbsbeschränkungen (Federal Act on Cartels and Other Restraints of Competition).

[29] In the payment cards market, for example, Comco opened an investigation concerning domestic multilateral interchange fees (DMIF) of Visa and MasterCard in the Swiss credit card market. The assessment led to an amicable settlement in 2005 between the parties involved which sets a maximum DMIF. Comco deemed the

1.3.8 Foundation for Consumer Protection

The protection of consumer rights is not mandated to any federal agency in Switzerland. An independent foundation[30] supported by individual donors – primarily consumers – protects the interests of consumers vis-à-vis providers of goods and services and lobbies in the legislative process.

2. Payment media used by non-banks

2.1 Cash payments

As stipulated in the NBA, the SNB has the exclusive right to issue banknotes in Switzerland. Banknotes are printed by a private company.[31] The distribution of banknotes is carried out by the SNB via its offices in Zurich, Berne and Geneva along with 16 agencies (cash distribution services operated by cantonal banks). In this, the SNB fulfils the role of wholesaler. The capillary distribution and redemption of cash is effected by commercial banks, the Swiss Post and private cash handlers.

While the monopoly of coinage is with the Confederation, the SNB defines the coin minting programme and handles the coin distribution. On behalf of the Confederation, the SNB places coins in circulation and is required to take back coins against the reimbursement of their nominal value without any restriction.

Notes are issued in six denominations (CHF 10, 20, 50, 100, 200 and 1,000) and coins in seven denominations (CHF 0.05, 0.10, 0.20, 0.50, 1, 2 and 5).

Cash is a widely used retail payment instrument in Switzerland; however, there are no firm statistics available to determine the precise figure. Withdrawals are mainly made at ATMs, but also over the counter at post offices or at banks. For its customers, PostFinance offers *cash-back*[32] with PostFinance's debit card at the counters of various big retailers and Swiss Federal Railways. At the end of 2009 banknotes and coins in circulation inside and outside banks amounted to CHF 52.7 billion, compared to CHF 37.79 billion in 2000.

2.2 Non-cash payments

2.2.1 Transaction accounts

Given the large number of banks and the strong presence of Swiss Post with its payment services offered by PostFinance, the Swiss population has easy access to bank accounts. The great majority of firms and individuals own at least one private account with a bank or with PostFinance – typically serving also as a salary account. Cashless payment transactions are generally made by using the balances on these accounts.

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fixing of the DMIF in Switzerland to be a price agreement violating the principle of competition (for more details on the DMIF regulation, see Section 2.2.5).

[30] Called "Stiftung für Konsumentenschutz", which translates into "Foundation for Consumer Protection".

[31] Orell Füssli Security Printing Ltd (www.ofs.ch). The company is based in Zurich and belongs to the Orell Füssli Group. The SNB holds a third of the shares of Orell Füssli Group.

[32] "Cash-back" is a term used for the withdrawal of cash at the point of sale. This function is currently not offered to Maestro cardholders in Switzerland.

2.2.2 Credit transfers

The overwhelming majority of cashless payments in Switzerland take the form of credit transfers, not least because of historical developments as described in 1.3.1 above. In 2009 a total of more than 702 million credit transfers with a value of CHF 3,970 billion (contrasting with 521 million card payments totalling CHF 81 billion and 0.71 million payments with cheques amounting to CHF 2 billion in 2009) were initiated by non-banks and settled in SIC and PostFinance.

It is worthwhile to note that the billing culture in Switzerland is primarily based on credit transfers. Generally, each consumer bill (eg insurance, utilities, telecommunication or obligations from distance sales) and also tax bills have a standardised payment slip attached, including details on the amount due, the beneficiary's bank, its account number and address.

Consumers have different ways for paying their bills by means of a credit transfer (the most common are listed below). While banks/PostFinance generally charge a per transaction fee for those options that include manual manipulations, bill payment using online banking is typically free of charge.

– In the most traditional way, the customer takes the payment slip to the nearest post office and effects the payment by passing the payment slip along with the cash over the counter. This procedure is possible for two reasons: firstly, all Swiss payment slips are standardised and acceptable for payment at Swiss Post Offices, even if the beneficiary's account is with a bank. Secondly, Swiss Post allows non-account holders to effect payments in cash at the counter.

– Customers can send payment slips by mail to their home bank/PostFinance, where they will be processed in processing centres.

– Most banks that offer transaction accounts also provide online banking facilities for their customers. In order to initiate a payment online, a customer has to manually enter the payment information provided on the physical payment slip into the online banking application.[33]

– Another form of paying bills online are e-bills schemes.[34] At least three conditions have to be met to initiate electronic bill (e-bills) payments: Firstly, the payer (customer) has to use internet banking with his/her home bank and register for e-bills services. Secondly, the customer's and the biller's financial institution have to be a participant in the e-bills platform (SIX Paynet or PostFinance E-bill). Thirdly, also the biller needs to register with the e-bill platform and needs to have an account with PostFinance and with a bank participating in the SIX Paynet. If these conditions are met the customer can choose to receive bills electronically from the biller instead of on paper. As of that moment all the bills of the corresponding billers will show as e-bills on the customer's internet banking interface. Payment of e-bills can be executed by means of one click. However, unlike the direct debit procedure the initiative for paying an e-bill stays with the customer, as does the control for changing the due date or the amount of the bill.

Moreover, credit transfers can be delivered in the form of standing orders. These are typically implemented with repeating payments of the same amount such as rent, insurance premiums or certain utility payments. Standing orders can be initiated online or on paper forms.

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[33] There are also sophisticated devices available that reduce the necessary manual interventions.

[34] Also known as e-invoicing or electronic bill presentment and payment.

Swiss banks and PostFinance have been participating in the SEPA (Single Euro Payments Area) credit transfer scheme since the end of January 2008,[35] enabling customers to initiate credit transfers for domestic and cross-border payments in euros using the SEPA credit transfer procedure. Traditional payment procedures can be used concurrently. As a result of the use of the IBAN and BIC[36] for SEPA payments, more and more credit transfers in Swiss francs use IBAN instead of the traditional bank account number and bank address. The IBAN is now printed on each account statement and on most Maestro debit cards.

2.2.3 Direct debits

Both the banking sector and PostFinance offer separate direct debit procedures. The banking sector's interoperable direct debit services are offered in Swiss francs and euros by SIX SIC Ltd and settled in SIC/euroSIC.[37] PostFinance's proprietary direct debits are also available in Swiss francs and euros and settled internally. In 2009, the number of direct debit transactions initiated at accounts with banks and PostFinance was 46 million with a total value of CHF 62.2 billion (compared to 52.2 million transactions with a value of CHF 80.5 billion in 2005).

Typically the direct debit procedure is used for recurring payments of variable amounts, for instance credit card bills, insurance premiums, telecommunication or utilities bills. One-time consent of the debtor (payer) is needed to authorise a specific biller to initiate the direct debit procedure. The beneficiary is responsible for obtaining the authorisation of the debtor.

Technically, direct debits offered by SIX SIC Ltd are processed as credit transfers. At least two days before the due date of the payment, the beneficiary sends the details of the upcoming payment to the payer's bank, where all the necessary checks are conducted (eg check of account holder, of sufficient account coverage, of correctness of authorisation). If all the checks pass successfully, the payer's bank releases the payment in the form of a credit transfer on the due date and charges the payer's account accordingly. Payments are settled individually in SIC.

Since November 2009 Swiss financial institutions have provided SEPA direct debit transactions in euros through euroSIC. By means of the SEPA direct debit procedure, consumers are given an instrument to execute direct debits in euros across borders reaching all SEPA countries. In mid-2010, however, only six Swiss banks were participants in the SEPA direct debit scheme. The value and volume of SEPA direct debit payments involving Swiss financial institutions have remained marginal, in line with the trend in most SEPA countries.

Overall, direct debits have decreased in both value and volume in the last five years, while credit transfers have increased in value and in volume. E-bills are evidently becoming a serious competitor for direct debits, as the number of consumers and companies using and offering e-bills increases. Both payment processes are similarly convenient, but from the perspective of a consumer e-bills have a small but important advantage over direct debits: while the control to initiate an e-bill payment remains with the payer, in a direct debit transaction the consumer cedes control to charge his/her account to the biller. Despite adequate power for consumers to revoke unjustified direct debits, surrendering control over one's account to a third party may seem questionable, especially since e-bills offer a valid alternative without this drawback.

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[35] As of July 2010, 150 Swiss financial institutions were participants in the SEPA Credit Transfer scheme.

[36] The IBAN (International Bank Account Number) and the BIC (Bank Identifier Code) identify an account and a bank respectively and are both ISO standards.

[37] euroSIC is an interbank payment system settling transactions in euros. For details, see Section 3.3 below.

2.2.4 Cheques

As mentioned in Section 1.3.1, cheques have never been widely used in Switzerland for historical reasons. Since around 2000 the already slim significance of cheques has continued to decline, not least due to higher fees charged by financial institutions for issuing cheques and for cashing them in. An increasing density of ATMs and EFTPOS[38] terminals may also have contributed to this decline. As a consequence of the decreasing use of cheques, the Swiss cheque clearing centre was closed down in 2004 and banks had henceforth to collect the funds from the drawn bank directly. Settlement takes place individually in SIC. In 2009 a total of merely 0.71 million cheques were processed, amounting to CHF 2.02 billion (compared to 11.2 million cheques with a value of CHF 27.7 billion in 2000).

Equally, traveller's cheques in Swiss francs have declined strongly in significance over recent years. While they amounted to CHF 1 billion in 1989, less than CHF 50 million worth were used around the world in 2009. Consequently, at the end of 2009, Swiss Bankers[39] ceased to issue traveller's cheques in Swiss francs. Alternatively, they offer a prepaid card (travel cash) which can be used for cash withdrawal at most ATMs around the world and for payment at EFTPOS terminals wherever Maestro is accepted. Like traveller's cheques, travel cash cards are promptly replaced worldwide if stolen or lost.

2.2.5 Card payments

Credit cards

Swiss consumers have traditionally relied less on credit cards than consumers in other countries. Only in recent years have major retailers started to offer credit cards without an annual fee and have linked these cards to their existing bonus programmes. Accordingly, the number of credit cards, along with the number of transactions, has begun to increase. At the end of 2009 around 4.7 million cards were in circulation in Switzerland (compared to 3.1 million cards in 2000). Accordingly, the number and value of credit card transactions in Switzerland increased over the same period from 90.9 million transactions to 149.2 million, and from CHF 18 billion to CHF 26.4 billion, respectively. Consumers in Switzerland can choose between a range of different credit card brands; besides the dominant players MasterCard and Visa, American Express or Diners Club cards are issued. Other international credit card brands such as Discover, JCB or China Union Pay are not issued in Switzerland, but are accepted by many retailers at their POS (point of sale) or at ATMs for cash withdrawal.

Credit card issuers in Switzerland grant card owners a grace period of typically 20 days after issuing the invoice to meet their obligations. Owners are generally billed in Swiss francs; in some cases they can also opt for credit cards in euros or US dollars. Interest on outstanding credit card balances after the grace period is limited to 15% by the consumer credit law.[40] Thus, credit card issuers demand between 9.5% and 14.75% interest. However, in Switzerland only an estimated 10–20% of consumers make use of their credit cards' credit option by becoming credit revolvers, while the others tend to pay their bills on time. Payment of credit card bills is typically done using one of the above-mentioned credit transfer methods or by means of direct debit.

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[38] Electronic funds transfer at the point of sale.

[39] Swiss Bankers Prepaid Services Ltd is a joint stock company owned by the Swiss banks founded in 1975 for the issuance of traveller's cheques; nowadays, however, the company is primarily active in the prepaid cards market. See Section 2.3.3.

[40] Bundesgesetz vom 23. März 2001 über den Konsumkredit (federal law on consumer credit). In force as of 1 January 2003.

Debit cards

The debit card market in Switzerland is dominated by two main schemes. Banks issue debit cards of the international Maestro scheme, while PostFinance issues its own debit card named PostFinance Card. POS terminals as well as ATMs generally process both debit card schemes along with a selection of additional cards, depending on the acquiring contract of the retailer. Besides the two dominant players, a leading retailer in Switzerland, Migros, issues its own debit card named M-Card through its affiliated bank, Migros Bank. M-Card owners have a bank account with Migros Bank and can use the card for POS debit transactions with all merchants affiliated to Migros. Some of the M-Cards are dual branded with Maestro and can be used outside the Migros world. All debit cards in Switzerland are equipped with EMV chip technology.[41]

The foreign-issued Visa debit cards, V-Pay and Visa Electron, are widely accepted by retailers in Switzerland but are not issued by financial institutions in Switzerland. There is, however, some indication that Visa may issue its first V-Pay cards in Switzerland in 2011.

Starting in the late 1990s Maestro cards[42] were equipped with the e-money chip CASH. However, in 2009 most Swiss banks issuing Maestro ceased to provide CASH on their debit cards (see the discussion of electronic money below).

Overall there has been a substantial increase in the number of debit cards in circulation. From 5.2 million cards in 2000 (172 million transactions, for CHF 26.1 billion) the number of cards in circulation rose to more than 7.9 million in 2009 (371 million transactions, for CHF 55.2 billion). Consequently, there is slightly more than one debit card per capita in Switzerland.

Retailer cards

Various petrol companies, large retailers and retailers' associations issue their own payment cards, which are typically only valid at their particular outlets. Customers generally receive a monthly statement of their purchases. Typically no subscription fee is charged.

Electronic money

Since January 1997, the e-money solution CASH has been in operation in Switzerland. CASH is a chip-based card that can be loaded and unloaded at bank ATMs[43] and was meant to substitute for small-value cash payments. For over a decade the CASH e-money function was part of most Maestro cards. PostFinance offered a neutral CASH card. All customers with the CASH function on their card could load funds onto their chip at any ATM up to a maximum of CHF 300, technically transferring the amount from their transaction account onto the chip. CASH has a comparable characteristic to that of currency in cash: in case of card loss, the amount on the chip is irrevocably lost.

Accepting CASH at their POS requires retailers to install a separate e-money terminal.[44] Consequently, while more than 5 million cards with a CASH chip were in circulation in 2009, only around 13,000 terminals accepted CASH in Switzerland – a considerably smaller number than the 143,000 EFTPOS terminals that accept most debit and credit card brands.

[41] EMV is a standard that was devised jointly by Europay, MasterCard and Visa to facilitate compatibility for chip-based payment cards (EMV stands for the three initial letters of the three card systems).

[42] Or its predecessor ec-Card.

[43] PostFinance ceased to offer this option at its ATMs in September 2009.

[44] A terminal that can process CASH payments along with debit and credit card transactions was launched only in mid-2010.

While some canteens and a few kiosks offered CASH terminals, most payment points where e-money could have had a considerable convenience advantage over coins remained without the CASH option (eg parking meters, ticketing or vending machines). This may have contributed to the general low popularity of CASH and the steady decline of its usage over the last decade. After a peak in 2002 of 20 million transactions, the number of CASH transactions decreased to 15 million in 2009 while values remained roughly unchanged at CHF 70 million.

In 2009 PostFinance decided to no longer issue its neutral CASH card. Likewise, in 2010 the majority of Swiss banks gave up issuing their Maestro cards with a CASH function. This will naturally lead to a substantial decrease of CASH-capable cards in circulation. Consumers still wishing to pay with CASH will have to put up with carrying an additional neutral CASH card.

Payment card interchange fee regulation in Switzerland

In 2004 Comco started an investigation of the domestic multilateral interchange fee (DMIF) charged by MasterCard and Visa in the Swiss credit card market (to date there has been no DMIF in the debit card market). Since most credit card issuers in Switzerland engage in dual branding,[45] the same representatives sit on both committees where the DMIF for each card system is set. Comco came to the conclusion that the fixing of the DMIF was, in principle, a price agreement and that the non-discrimination rule was anti-competitive. It did concede, however, that a multilateral procedure for setting the interchange fee in a complex four-party system actually has efficiency advantages in that it facilitates market entry for newcomers and contributes significantly to lower transaction costs.[46] In Comco's opinion, nonetheless, the collective setting of the interchange fee would be an advantage only if the fee were limited to actual cost components that were indispensable for the functioning of the network. These cost components did not include the costs arising from the interest-free period, losses in connection with the payment guarantee, marketing among merchants or reward schemes.

On the basis of this cost approach, the parties involved together with Comco came to an amicable settlement which sets a maximum DMIF of 1.3–1.35% per transaction. For reasons of transparency, the parties involved are obliged to disclose the exact DMIF to merchants. In addition, the non-discrimination rule was declared unlawful in order, firstly, to strengthen the negotiating position of merchants and, secondly, to increase the competitive pressure on credit card systems from other payment instruments. This amicable settlement of 2005 was set to run for four years, which would allow Comco to reassess the effects of the measures taken on competition in the credit card market at the end of this period. Accordingly, a new investigation by Comco was opened in June 2009. In early 2010 Comco issued provisional measures with the aim of renewing the approach of 2005 in a modified manner. As a consequence, the new DMIF has been set at 1.058%. As in 2005, these new measures are based on an amicable settlement with the most important market players and will stay in force until Comco has come to its final decision.

2.2.6 Automated teller machines

Switzerland has two ATM networks in operation: the bank network (Bancomat) operated by SIX Card Solutions and the PostFinance network (Postomat). The two networks are

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[45] Ie they issue both Visa and MasterCard cards.

[46] Without a multilateral approach an acquirer, for instance, that tries to gain access in the Swiss market would have to fix an interchange fee with every Swiss issuer bilaterally.

interoperable; however, typically cash withdrawals other than at branches of a customer's home bank's ATM or in the other network are subject to a fee.[47]

The number of ATMs operated by the two networks has increased substantially, from 4,866 in 2000 to 6,228 in 2009. While the number of withdrawals at ATMs in the country increased from 98.9 million in 2000 to 120.3 million in 2009, the total amount withdrawn remained almost constant, at CHF 26.3 billion in 2009 versus CHF 26.8 billion in 2000.

Both Bancomat and Postomat networks support cash withdrawals using a wide range of domestic and international debit and credit cards. Besides cash withdrawals, Bancomat and Postomat offer some basic additional functionalities, such as changing the PIN code, loading/unloading of the chip-based e-money CASH,[48] or requests for bank account statements. All Postomats and a majority of the Bancomats offer cash withdrawals in both Swiss francs and euros. A few banks offer terminals on their premises with a cash deposit or credit transfer function for their own customers.

Cash withdrawals at a card owner's home financial institution are processed internally and are typically free of charge as part of the account holder's package, while cash withdrawals at other banks are processed by third-party card processors and are mostly charged a per transaction fee. Some of the subsequent interbank obligations arising from such cash withdrawals are settled in SIC in bulk payments depending on the arrangements by the processor.

PostFinance gives its cardholders the option to withdraw cash not only at every post office and at every ATM of both national schemes, but it also offers cash-back at the POS of various retailers and Swiss Federal Railways. Cash-back would technically also be possible for Maestro cards: however, this functionality is currently not offered.

2.2.7 EFTPOS infrastructure

The current EFTPOS infrastructure in Switzerland has been conjointly operated and developed over the last one and a half decades by a consortium consisting of PostFinance and what used to be Telekurs Group[49] together with large merchants, acquirers and EFTPOS terminal producers. Based on the objective to standardise all card payments including all related processes, functionalities and interfaces independent of card brand and card type, these market groups concertedly engineered the ep2 standard. This standard allows for an open and modern system based on international standards (eg EMV chip technology) and international recommendations. It provides that all payment card brands and card types can be processed at the same terminal and that the act of payment is identical for all consumers across all card brands and card types. For merchants, ep2 standardises operational processes with all acquirers and terminal providers. An ep2-capable terminal can be connected to multiple acquirers, thus allowing for competition between acquiring services. Consequently a merchant can choose the most lucrative offer for each accepted card and is not bound by the terminal infrastructure to one specific acquirer for all accepted card brands. Moreover, the ep2 standard is also compatible with the requirements of the SEPA cards framework.

[47] Fees vary between banks as well as between card types. Withdrawals with credit cards tend to carry higher fees than those with debit cards.

[48] This functionality was phased out at PostFinance's ATMs in September 2009.

[49] Now SIX Multipay and SIX Card Solutions, both subsidiary companies of SIX Group Ltd.

The cooperative approach in the area of EFTPOS infrastructure allowed the development and implementation of a common standard (ep2) that facilitates competition on card payment services while not compromising industry-wide efficiency and interoperability.

Hence, most Swiss EFTPOS terminals are compatible with the ep2 standard. At the end of 2009 there were a total of more than 261,000 EFTPOS terminals at retail outlets and filling stations accepting Maestro and/or PostFinance cards (compared to 141,000 terminals in 2000)[50] and 321,000 EFTPOS terminals accepting credit cards at end-2009 (2000: 275,000).[51]

2.3 Recent developments

2.3.1 Mobile payments

Several m-payment solutions have been promoted in Switzerland over the last few years. Some of them charge the payment amount to mobile phone bills, while other m-payment solutions are linked to bank accounts or credit cards.

PostFinance, for example, offers an m-payment solution for its customers – a system that is not interoperable with account holders of other banks. After having registered for the service, a PostFinance customer can initiate a payment via SMS, or at certain sale points the customer is prompted to call a specific phone number. In the latter case after a successful connection a caller is asked to initiate a payment by typing a sequence of digits on the mobile phone keypad. The payment amount is charged to the customer's PostFinance account and in-house settlement and notification of sender and beneficiary takes place instantaneously. For security reasons there is a default transaction cap of CHF 100 per day and CHF 250 a month.[52] Consequently, PostFinance's m-payments are typically used for small-value customer-to-customer transfers or customer-to-business payments.

A further m-payments solution for smartphones, called "Vanilla", was launched in mid-2010 by a leading Swiss media company in collaboration with a bank specialised in consumer credit and credit card issuance.[53] To initiate a payment, registered users have to activate an applet on their smartphone using a PIN. The applet generates a one-time-useable bar code on the phone's screen which can be presented to the bar-code scanner at the POS of a registered merchant. The scanner recognises the bar code as a Vanilla payment and passes the payment details on for processing. As with a credit card, Vanilla users can pay their full monthly credit balance or opt for monthly instalments (the outstanding amounts are charged interest comparable to that of credit cards). Credit limits apply depending on the creditworthiness of a customer.

M-payments have been slow to take off in Switzerland – a fact that may not be overly surprising given the well established payment infrastructure in the country. Almost all Swiss consumers are banked, have easy access to initiate payment transfers (via post offices or through their home bank by mail or online banking) and have at least one payment card that is linked to their bank account with almost ubiquitous acceptance by merchants. Thus, in any payment situation a customer typically has one or more alternative instruments available

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[50] An EFTPOS terminal that processes debit card payments by PostFinance and Maestro is counted as representing two processing possibilities.

[51] Data including MasterCard, Visa, American Express and Diners. A POS can accept multiple credit card brands. Accordingly, the figures can include multiple counting.

[52] Both caps can be adjusted by the user at any time and to any amount between CHF 0 and CHF 3,000.

[53] Details on the functioning as well as on the service range and products can be found at www.vanilla.ch.

besides cash. Consequently, the niche for the present m-payment solutions offered in Switzerland appears to be somewhat slim. Places where m-payments are currently used include parking meters, vending machines, unattended shops at the roadside offering produce and flowers, or mountain cabins without EFTPOS but with mobile phone reception.

2.3.2 Payments in e-commerce

Moreover, in reaction to the increasing share of online purchases in recent years, a variety of services have come to the market that provide secure online card payment terminals. A consumer can typically pay at these online terminals with a similar range of cards as at physical POS terminals.

Overall, the area of online payments for e-commerce has undergone some innovations in recent years. The objective of these developments typically is to increase the (perceived) payment security for the consumer. Credit cards still account for the dominant share of payments executed online. Nevertheless, some studies show that concerns about passing on credit card credentials are among the main reasons why consumers cancel online purchases before the payment stage.[54] To improve this situation, credit card companies on the one hand are endeavouring to improve security standards for online payments by applying additional security features such as MasterCard SecureCode or Verified by Visa. On the other hand, e-payment solutions are being promoted that enable consumers to use their familiar online banking environment to initiate a payment to an online shop.[55] PostFinance is the only Swiss financial institution which currently offers an online-banking-based e-payment solution. Additionally, a German non-bank payment service provider[56] offers e-payments and has its platform linked to a range of Swiss banks' online banking websites. The Swiss banks and PostFinance are currently in the process of evaluating the establishment of their own e-payments platform within the SEPA framework.

2.3.3 Contactless and prepaid cards

Contactless credit card technology along with contactless cards has been introduced in Switzerland in the past few years. However, these innovations have neither been widely used nor widely accepted so far.

Recent years have, however, seen an increase in the variety of prepaid cards offered in Switzerland. They tend to replace physical vouchers of various sorts. Big retailers in particular are phasing out traditional gift vouchers by replacing them with prepaid gift cards. Increasingly, the merit of prepaid cards is also being perceived in the light of the almost ubiquitous acceptance of debit and credit card schemes at POS or ATMs. Prepaid cards are issued for a range of purposes such as travelling, for people without access to real credit cards or without bank accounts, or for customers with low creditworthiness.

As mentioned in Section 2.2.4, a traditional issuer of traveller's cheques has started to produce prepaid Maestro-based travel cards. In addition, Maestro-based prepaid cards have

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[54] See for example M Breitschaft et al, "Erfolgsfaktor Payment – Der Einfluss der Zahlungsverfahren auf Ihren Umsatz", ibi research, Universität Regensburg, June 2008, www.ecommerce-leitfaden.de.

[55] When reaching the checkout in the online shop, consumers are given the option to pay via e-payment besides credit cards, Pay Pal or other means. They can click on the icon of their home bank and get connected to their home bank's familiar online banking environment. After having gone through the regular authentication procedure (eg username, password, token), the amount due to the online shop shows up in the online banking-interface. After a few clicks the payment is initiated and the online shop is informed instantly about the payer's bank's payment guarantee.

[56] www.sofortueberweisung.de.

been developed for organisations to replace cash payments to their beneficiaries. For instance, such cards are used by migration authorities to provide support to migrants without bank accounts, by consumer credit companies to disburse instant loans, or by airlines to make compensation payments to international passengers. Moreover, recently a prepaid card based on the MasterCard scheme has been launched that can only be used for payments via the internet, targeting people without access to real credit cards but in need of a payment instrument for online purchases.

3. Payment systems (funds transfer systems)

3.1 General overview

While the settlement of payments among customers of the same bank typically takes place in-house, interbank cashless payments in Swiss francs are executed in SIC. SIC is the central electronic Swiss payment system where participating financial institutions settle their payment obligations. Interbank payments in euros are for the most part settled in euroSIC, technically a clone of the SIC system with differences in the governance structure, regulation and oversight requirements. SIC and euroSIC settle both large-value and retail payments (for euroSIC, see Section 3.3).

There is no specific retail payment clearing house in Switzerland. Previous interbank retail payment clearing arrangements, eg for data carrier applications or cheques, have been closed down in recent years due to the decreasing demand for such services and technological advances that made them obsolete. Payments that used to be cleared in previous retail systems are now settled individually in SIC/euroSIC. Moreover, the former direct debit clearing arrangement was superseded by a different technical direct debit procedure in 2006, in which direct debits are individually settled in SIC/euroSIC.

3.2 Large-value payment system: Swiss Interbank Clearing

3.2.1 Institutional framework

The SIC system – Switzerland's RTGS system – has been in operation since June 1987. It is operated on behalf of the SNB by SIX Interbank Clearing Ltd, a subsidiary company of SIX Group Ltd. Currently, SIX Interbank Clearing Ltd is 75% owned by SIX Group Ltd, while PostFinance holds a share of 25%.

The SNB is the system manager and settlement agent. In this function, it lays down the conditions for admission to and exclusion from the SIC system. The SNB maintains the accounts of the participating institutions, provides the liquidity necessary for settlement in SIC and sets times when operations begin and end. In addition, the SNB monitors daily operations and is responsible for crisis management in the event of disruptions or incidents. SIX SIC Ltd operates and maintains the processing centres as well as the communications and security installations. It also develops and maintains the software and manages the data files as well as the organisational and administrative rules of conduct.

There is no comprehensive single law that covers all aspects of relevance for a payment system in Switzerland. The enforceability of contracts under private law as well as payment instructions executed under the SIC system are governed by the Swiss Code of Obligations. The Code of Obligations supports in particular the electronic processing of payments and underpins the SIC rules and regulations in relation to the irrevocability of payment instructions. In this respect, a provision in the Code of Obligations which came into effect on

1 October 2009 states that payment instructions are irrevocable with the debiting of the transferor's account unless the rules and regulations of a payment system state otherwise.

Where one of the participants concerned becomes the subject of insolvency proceedings, its rights and obligations are addressed under insolvency laws. In order to protect the system against systemic risks, Article 27 (2) of the Swiss Banking Act limits the effects of insolvency measures on instructions given to payment systems and protects the finality of a payment in the event of a system participant's insolvency. Under Swiss law there is no "zero hour rule" which could affect the validity of the transaction order.

The rights and obligations of the SNB, SIX Interbank Clearing Ltd and the system participants are set out in three contracts governed by Swiss private law:[57]

- SIC participants' relationship with the SNB, as provider of settlement accounts, is governed by the SIC giro agreement (SIC-Girovertrag). The SIC rules and regulations, consisting of technical rules and regulations and a user manual, are part of this contract and therefore binding for all SIC participants. Among other things, they govern the sequence of the settlement day (including hours of operation and the different phases during an RTGS business day), different types of participation in the system, security issues, contingency arrangements, message standards, settlement of the transaction (including definition of the moment when the settlement of a payment becomes irrevocable) and various aspects related to system administration.
- SIC participants are also obliged to sign the SIC supplementary agreement with SIX Interbank Clearing Ltd (SIC-Ergänzungsvertrag). This agreement governs the code of conduct in SIC and in particular the allocation of potential losses.
- The relationship between the SNB and SIX Interbank Clearing Ltd is governed by a contract which defines the obligations and duties of each party.

Committees including representatives of the SNB and the participating institutions submit proposals for changes and additions to the manuals and take decisions on technical modifications to the application. All changes and additions require the SNB's approval.

The SIC system is a key element in the Swiss Value Chain[58] and plays a crucial role for the implementation of the SNB's monetary policy. The SNB has designated SIC as important for the stability of the Swiss financial system. As a consequence, the SIC system needs to comply with the minimum requirements set out in Articles 22–34 of the NBO. These minimum requirements are largely based on international standards (ie the Core Principles for Systemically Important Systems).[59]

3.2.2 Participation

Originally, participation in SIC was limited to banks domiciled in Switzerland and subject to banking supervision by FINMA. The only exceptions to this rule were domestic clearing and settlement organisations. Over the years, this policy has been increasingly challenged by developments in domestic and international financial markets. On the one hand, non-bank intermediaries have gained ground in financial markets and thus questioned the dominant

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[57] Providers of service payments (see Section 3.2.3) and indirect SIC participants need to sign additional contracts. Participants with a SWIFT connection need to sign a contract pertaining to participation in the SWIFT closed user group with SIX Interbank Clearing Ltd.

[58] See footnote 24.

[59] Committee on Payment and Settlement Systems, *Core principles for systemically important payment systems*, Bank for International Settlements, Basel, January 2001.

role of banks in this area. On the other hand, globalisation of markets has brought about not only ever-growing payment volumes, but also stronger competition among financial centres and associated cooperation and mergers between providers of financial market infrastructure. These trends have led to an increased need for remote payment system access. In the wake of these developments, the SNB's access policy has been substantially revised. The first major revision took place in 1998, when access to SIC was granted to supervised securities dealers (non-banks), international joint ventures, clearing and settlement organisations, as well as the associated banks as long as all these were subject to the same standards in regard to supervision, anti-money laundering and telecommunication infrastructure as Swiss participants.

In the second revision of the SIC access policy[60] that was put in force on 1 January 2010, access was broadened to include FINMA-regulated insurance companies and funds managers that are highly active in the money market. The new policy extends the group of participants to include foreign clearing and settlement companies without a banking licence provided they contribute to the stability of the financial system or to the smooth flow of payments transactions. Such companies must not bring with them additional risks and must prove that they are regulated adequately. Moreover, all participants are required to: have an appropriate internal organisation; conduct business in a professional manner; be knowledgeable about the functioning of the SIC system; ensure professional liquidity management; and meet technical and administrative obligations.

At the end of 2010, SIC had a total of 377 participants: 119 banks domiciled in Switzerland; 121 foreign banks registered in Switzerland; 118 foreign banks registered abroad; and 19 non-banks (private cash handling companies, government related institutions, PostFinance, insurance companies as well as clearing and settlement institutions).

3.2.3 Types of transaction

SIC is both a large-value payment system and a retail payment system. The majority of interbank cashless payment transactions in Switzerland are settled through SIC.

The types of payment handled in SIC can be divided into three categories: (i) customer-related payments (sender and receiver are non-banks); (ii) bank-to-bank payments (both parties are banks and SIC participants); and (iii) service payments (where a third party (eg SSS, card processor, SNB) is allowed to debit the account of an SIC participant and credit the amount to another SIC participant's account).

In 2009 SIC settled a daily average of 1.5 million transactions with a value of CHF 225.5 billion. The bulk of payments (88% in 2009) were smaller than CHF 5,000. In terms of total value, however, these small-value payments are negligible (0.005% in 2009).

On peak days SIC settled more than 4.8 million payments with a value of CHF 411.5 billion, which corresponded to 76% of 2009 Swiss GDP. Compared with other large-value payment systems internationally, SIC is among the top in terms of number of transactions settled, a fact that is predominantly due to the large number of retail payments being individually settled in SIC.

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60 For details on access criteria, see "Instruction sheet on cashless payment transactions", available at www.snb.ch.

3.2.4 Operation

Real-time gross settlement

SIC is an RTGS system. In contrast to deferred net payment systems, where incoming and outgoing payments are accumulated and the net amount is settled irrevocably and with finality at a later, predetermined time, SIC settles each payment individually, irrevocably and with finality.

Account management

The balances held by SIC participants in their sight deposit accounts at the SNB serve as the settlement asset. Payments are thus settled in central bank money. The sight deposit account is used for cash withdrawals and transactions with the SNB which are routed through the SNB's accounting system. Interbank transactions in SIC are routed via the SIC settlement account. The reason for having a separate sight deposit account and settlement account is merely of a technical nature; from a legal point of view, both accounts are considered as one. An additional SIC sub-account is available to those SIC participants that are linked to the international foreign exchange settlement system CLS. In this sub-account, banks can reserve liquidity to be used exclusively for time-critical payments to CLS Bank.

Connectivity

There are three ways for participants to connect to SIC:

- Via a proprietary network: Participants can connect to SIC via the SIX Group's proprietary communication network FinanceIP Net. The connection can either be direct or via a third-party service bureau. For direct connection, the requirements include a dedicated telecommunications line, defined hardware and software, a high-security module and a front-end application. The technical requirements in the case of connection via a third-party service bureau vary according to provider.
- Via SWIFT: Participants can connect via SWIFT using the remoteGATE connection. With this variant, payments are entered via a SWIFT application. The settlement account can be viewed through an internet connection.
- Via the SNB: In exceptional cases, the SNB itself manages a participant's settlement accounts (eg Eurex and SECOM transactions or interbank payments for liquidity management are admissible via these accounts). Communication between the participant and the SNB is based on SWIFT.

3.2.5 Settlement

Process sequence of a settlement day

Participants can enter their payment orders in SIC around the clock. Payments are processed for approximately 23 hours. A settlement day starts at 5.00 pm on the previous calendar day and ends on the value date at 4.15 pm. All payments entered by 3.00 pm (cutoff 1) are settled as of the same value date.

Customer payments entered after cutoff 1 will be settled as of the following value date. Cover payments, however, may also be submitted for same-day settlement between 3.00 pm and 4.00 pm (cutoff 2). Cover payments are bank-to-bank payments that are made in the name and on account of the bank issuing the transfer order. The reason for such payments may, for instance, be money market transactions. Consequently, the interval between cutoff 1 and cutoff 2 allows those participants whose payments could not be settled to procure the necessary liquidity on the money market. In addition, between 4.00 pm and 4.15 pm (cutoff 3), participants may also obtain liquidity from the SNB under the liquidity-shortage financing facility via special-rate repo transactions. The SIC day closes with end-of-day processing where pending payments are cancelled and balances are transferred from the SIC settlement account to the sight deposit account. The next value date begins at approximately 5.00 pm, and the balances of the individual sight deposit accounts are transferred to the SIC settlement accounts.

Payments are only settled in SIC if the remitting party has sufficient funds in its SIC settlement account. Any time the participant enters a new payment, it is first queued. If there is sufficient cover in the SIC settlement account, the payment order will be settled immediately. If funds are insufficient, the payment remains in the queuing system until there are sufficient funds. SIC participants can manage the settlement sequence of their payments by assigning priority classes to payments. The exact settlement sequence of the payments in the queuing system is then determined by an algorithm, the functioning of which is described below. Payments in the queuing system can be revoked by the remitter at any time up to cutoff 1 (3.00 pm) without the consent of the recipient. Payments remaining in the queuing system at the end of the settlement day due to insufficient cover will be cancelled and must be resubmitted. In such a case, the recipient of the payment that was not settled is entitled to charge the remitter default interest amounting to the prevailing money market rate plus 50 basis points.

Settlement algorithm

If SIC cannot settle a participant's payments immediately following their submission due to insufficient funds, payments are transferred to a waiting queue and organised according to priority and time of submission. As soon as the necessary funds are available, the oldest payment in the queue with the highest priority is settled first. If the system is unable to settle a participant's first payment in the queue for 15 seconds, circle processing is initiated. This mechanism checks whether a counterpayment of the receiving participant to the sending participant is pending in the queue. If enough funds are available for the settlement of the net amount, the two payments are processed simultaneously, thus resolving the gridlock in the system. Subsequently, the regular settlement resumes.

3.2.6 Credit, liquidity and operational risk management

Credit risk

Credit risk is the risk that a party will not be able to meet its financial obligations either when they fall due or at any time thereafter. In connection with payment systems, a distinction is made between two types of credit risk:

Firstly, there is credit risk between direct participants. In the case of netting systems, incoming and outgoing payments are accumulated, with the settlement taking place at a later, predetermined time. Up to the time of the final settlement, credit relationships can be established between participants, and this gives rise to credit risk. In the case of SIC, no such credit relationships are established because, owing to the use of real-time gross settlement, all payments are settled individually, irrevocably and with finality.

Secondly, settlement bank risk refers to the risk that the institution holding the accounts will default, causing the participants to lose their deposits. Thus, financial institutions that are not able or do not wish to participate in SIC directly incur the risk that their settlement bank will default. The SNB counters this risk by providing access to the payment system for as wide a range of participants as possible. Those financial institutions without access to SIC can minimise this risk by choosing an account-holding institution that is as financially sound as possible.

Liquidity risk

Liquidity risk is the risk that a system participant does not have enough liquidity to meet its financial obligations when they fall due but can do so at a later date. Different measures help to keep the liquidity risk for SIC participants and the danger of a system gridlock as low as possible:

- First, participants can access different sources of liquidity, particularly the SNB's intraday and liquidity-shortage financing facilities (for details see Section 3.2.7). This allows them to react to fluctuating liquidity situations quickly and flexibly.
- Second, SIC supports the efficient use and active management of liquidity. Besides checking their account balances and the pending incoming and outgoing payments in the queue at any time, participants can manage the queue by prioritising and cancelling payments, thus optimising the payment stream. The option of entering payments in the system up to five days prior to their due date also facilitates liquidity planning.
- Finally, the following measures help to reduce system-wide liquidity requirements:
  - According to SIC rules and regulations payments in excess of CHF 100 million should be split up into smaller tranches, to prevent any gridlocks in the queuing system.
  - In case of a system-wide gridlock, SIC automatically activates an optimisation routine to unblock it. The system searches for any pending cross-payments from sending and receiving banks. If this is the case, and if sufficient cover is available, the payments are offset simultaneously on a bilateral basis.
  - The remitter of a payment pays a dual-component fee (see details on pricing policy in Section 3.2.9 below). One component depends on the time of entering the payment, the other on the time of settlement. Both fees increase in the course of the day. This creates an incentive for the participants to enter payment orders early, while at the same time providing sufficient liquidity so that settlement can occur equally early. The aim is to prevent participants from delaying their payments and waiting for incoming payments to finance their own outgoing payments.

Operational risk

Operational risk is the risk of losses or disturbances as a result of the inadequacy or failure of internal procedures, employees and systems, or due to external events. Payment systems must satisfy high security standards with regard to availability, integrity, confidentiality and traceability of data throughout the processing of transactions. An operational disruption or indeed a temporary failure of the SIC system would greatly impair cashless payment transactions in Swiss francs.

A broad range of organisational and technical measures help to reduce the likelihood or, if the case arises, the impact of an operational disruption of the SIC system and ensure that normal processing operations can be resumed quickly. SIC applications and data are synchronously mirrored on two data centres. In the unlikely event of a disaster affecting both primary centres, SIC can be operated on a third out-of-region data centre which would take less than 10 hours to come into operation following a disruption. In the event of technical disruptions affecting individual participants, the SNB has the ability to execute payments on behalf of SIC participants.

SIC and SNB's operational unit have established processes to monitor, review and follow up on operational incidents that affect the RTGS operations.

As a critical financial market infrastructure, the SIC system must be able to restore critical business processes within two hours, even after a major disruption. In order to meet this requirement, SIX Group Ltd has implemented business continuity plans to handle failures of all relevant sources, including premises, IT infrastructure and staff. In recent years, efforts in the area of business continuity management have focused on strengthening the resilience of the system in the event of a major incident affecting a wide geographical area and on the potential non-availability of critical staff (by implementing appropriate organisational measures).

The aforementioned measures notwithstanding, should the SIC system be unavailable for an extended period, either for technical reasons or due to connectivity issues, there is a regularly tested solution based on physical data exchange that allows settlement of payments with end-of-day finality.

3.2.7 Sources of liquidity

In order to make payments in SIC, participants must have sufficient liquidity in the form of sight deposit balances at the SNB. From the viewpoint of a participant, there are essentially two sources of liquidity: other system participants and the SNB.

The first source of liquidity is other system participants. In making payments, they supply a participant with liquidity in the course of the day. The incoming liquidity can be used immediately for settling one's own payments. In addition, participants can temporarily borrow liquidity from other system participants on the interbank money market (or lend excess liquidity). Both incoming and outgoing payments and money market transactions result in a redistribution of liquidity in the system.

The SNB is the second source of liquidity for system participants. Unlike payments and money market transactions between banks, each transaction between the SNB and a system participant results in a change in the liquidity available in the system. With its monetary policy instruments, the SNB is therefore able to steer the aggregate level of liquidity in the SIC system.

For the SNB's monetary policy instruments, a distinction is made between open market operations and standing facilities, which include the intraday liquidity facility and the liquidity-shortage financing facility:

Intraday facility

In order to facilitate the processing of payment transactions in SIC, the SNB provides SIC participants with interest-free liquidity during the day via repo transactions. Participants may notify the SNB of their intraday liquidity requirements on the preceding calendar day (at approximately 4.00 pm). The corresponding repo transactions will then be carried out at approximately 6.00 pm. Between 8.00 am and 2.45 pm SIC participants have another opportunity to obtain additional intraday liquidity. The funds obtained must be repaid to the SNB by the end of the same value date at the latest. In this way, the sight deposit balances at the end of the day are not affected. In the event of late repayment, penalty interest is payable to the SNB until the day when the payment is made.[61]

Liquidity-shortage financing facility

The SNB provides SIC participants with overnight credit in the form of a liquidity-shortage financing facility, to enable them to bridge short-term liquidity bottlenecks. The interest rate for liquidity provided through this facility is half a percentage point above the call money rate.

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[61] The penalty rate is calculated as follows: the call money rate (SARON – Swiss Average Rate Overnight) 12.00 noon fixing plus twice the special-rate surcharge, but not less than 1 percentage point (at end-2010 the special rate was 50 basis points). For more details see the "Instruction sheet on the intraday facility" available at www.snb.ch.

The prerequisite for using the liquidity-shortage financing facility is that a limit is granted by the SNB and that this limit is covered by collateral eligible for SNB repos.[62]

3.2.8 Links to other payment and securities settlement systems

SIC is linked to the SECOM securities settlement system, which allows the simultaneous settlement of obligations arising from the purchase or sale of securities on a delivery versus payment principle. The transfer of securities takes place in SECOM and the corresponding payment is settled in SIC (for details see Section 4.3.1). For the cash settlement of derivatives based on Swiss underlying assets, there is a link between SIC and the CCP Eurex Clearing. In addition, SIC is linked to the foreign exchange settlement system CLS. CLS Bank is a participant in the SIC system. CLS participants can settle foreign exchange transactions in 17 currencies via CLS. CLS participants can, thus, use SIC to transfer funds to their Swiss franc accounts at CLS Bank, where this liquidity is needed to settle foreign exchange transactions.

3.2.9 Pricing policy

Apart from a one-time connection fee of CHF 3,000, there are no recurring annual or monthly usage fees.[63] Transaction fees in SIC are set at a level that allows SIX SIC Ltd to fully cover expected operating costs and to earn an adequate return on capital. If there are substantial discrepancies between expected and actual revenue, fees can be adjusted by the board of directors of SIX SIC Ltd in the course of the year. Fees are set per transaction and charged to SIC participants. It is left up to each bank to decide whether and to what extent to pass on charges to its customers.

As of 2010, the receiving bank pays a flat-rate fee of CHF 0.02 per transaction. The sending bank pays a fee based on the sum of two components, one of which depends on the time of entering a transaction and the other on the time of settlement. In addition, the fee differentiates between small- and large-value payments, with the threshold being CHF 100,000. The table on the following page shows the prices valid as of 2010.

The fee structure is designed with two mechanisms (progressive fees and threshold) to incentivise the input and settlement of payments at an early point in time. As the fee structure differentiates between small and large amounts – the threshold being CHF 100,000 – it is particularly attractive to enter small payments early. Early input is beneficial from a system perspective for several reasons: firstly, the earlier a payment is entered into SIC, the more settlement options are available to the settlement algorithm in case of a queue; and secondly, it prevents the demand for settlement capacity from peaking towards the end of a settlement day, ie at times when the occurrence of a gridlock or an operational incident would pose a major concern. However, due to the progressive fee structure and the fact that payments larger than CHF 100 million are generally split into a number of tranches, gridlocks have never been a major issue in SIC.

[62] For more details see the "Instruction sheet on the liquidity-shortage financing facility" available at www.snb.ch.

[63] However, participants connecting to SIC through the SWIFT/remoteGATE service (see Section 3.2.4) are charged a monthly fee.

Fee structure for the sending bank as of January 2010[1]

In CHF

	Less than CHF 100,000		More than CHF 100,000	
	Input	**Settlement**	**Input**	**Settlement**
Before 8:00 am	0.007	0	0.007	0
8:00 am to 11:00 am	0.01	0.02	0.10	0.15
11:00 am to 2:00 pm	0.10	0.20	0.30	0.70
2:00 pm to 4:15 pm	0.40	0.60	1.00	2.00

[1] The receiving bank pays a flat fee of CHF 0.02 per payment (example: for a payment of less than CHF 100,000 entered before 8:00 am and settled after 2:00 pm, the sending bank pays CHF 0.607, consisting of CHF 0.007 for input before 8.00 am and CHF 0.60 for settlement after 2.00 pm).

3.3 Large-value payment system in euros: euroSIC

In light of the introduction of the euro the Swiss financial centre developed a central interbank payment system at the end of the 1990s to settle transactions in euros for Swiss financial institutions. In order to participate in TARGET, the RTGS system for the euro at that time, it was necessary to be located in the European Union. For that reason the Swiss financial community founded the SECB (Swiss Euro Clearing Bank) in Frankfurt to gain access to the euro market. The euroSIC system was launched in 1998. SIX SIC Ltd operates euroSIC on behalf of the SECB. Technically euroSIC is a clone of the SIC system, using the same technical platform and working according to the same rules.

The system manager of euroSIC is the SECB. In that function the SECB provides sight deposit accounts for participants, steers the euro liquidity in the system and performs beginning- and end-of-day operations.

Because of its legal residence in Frankfurt, the SECB is subject to supervision by BaFin, the German Federal Financial Supervisory Authority, and is overseen by the Deutsche Bundesbank. However, since euroSIC is a system of the Swiss financial centre and with a majority of Swiss participants, it also falls under the scope of the SNB's oversight. However, as euroSIC is not qualified as important for the Swiss financial system it is not subject to meeting the minimum requirements as stipulated in the National Bank Ordinance.

3.4 Continuous Linked Settlement

CLS is an international payment system which was launched in September 2002 for the settlement of foreign exchange transactions. It was designed to eliminate the settlement risk inherent in the conventional settlement mechanism for foreign exchange transactions. CLS is managed by the New-York based CLS Bank[64] and has access to all large-value payment systems of the 17 settlement currencies and has an account with the respective central banks, including a settlement account with SIC.[65]

[64] A bank authorised under the Edge Act as an "Edge Act corporation".

[65] As of 2010 the following 17 currencies are settled in CLS: Swiss franc, US dollar, pound sterling, Japanese yen, Canadian dollar, Australian dollar, euro, Danish krone, Norwegian krone, Singapore dollar, Swedish

CLS is able to settle foreign exchange transactions on the basis of a payment-versus-payment mechanism and, therefore, to eliminate settlement risk. Consequently, it makes a significant contribution to the stability of the global financial system. The Swiss franc was one of the currencies settled in CLS from the very start. Together with the other central banks of issue the SNB participates in a cooperative oversight group under the lead of the Federal Reserve Bank of New York.[66]

3.5 Retail payment systems

Three former interbank systems for clearing or netting of retail payments have been closed down in the last decade due to a decrease in demand and concurrent technological improvement that made these services obsolete. Previously individual systems used to exist for the clearing of data carrier applications and for the clearing of direct debits across accounts at different banks. Nowadays these payments settle individually in SIC. As a result SIC has experienced an increase in the volume of transactions and, from that perspective, proves to be more than ever a settlement system for retail payments. Similarly, the former cheque clearing system closed at the end of 2004 as a consequence of decreasing use of cheques in Switzerland. Banks now settle interbank obligations from cheque use bilaterally.

However, there are two dominant firms in providing services in the retail payments arena. As mentioned in Section 1.3.1 above, for historical reasons PostFinance has always played an important role in the Swiss retail payments area, offering a wide range of retail payment instruments. SIX Card Solutions, a company belonging to SIX Group, is dominant in the processing of card payments. Interbank claims arising from processed card payments are debited by SIX Card Solutions from the SIC account of the respective issuing bank and credited to the respective retailer.

4. Systems for post-trade processing, clearing and securities settlement

4.1 General overview

Securities traded on SIX Swiss Exchange include Swiss-issued and foreign equities, various bonds as well as investment funds, exchange-traded funds (ETFs) and exchange-traded structured funds. Off-order-book trades that are not concluded via the order book of SIX Swiss Exchange are reported to the Exchange ex ante. Increasingly, Swiss-issued shares are also traded on alternative platforms abroad, for instance Chi-X, Turquoise, NYSE Euronext and BATS Europe. The BX Berne eXchange has established itself as a niche exchange for trading shares of small regional companies. A wide variety of derivatives can be traded on the Eurex Exchanges and Scoach platforms. Eurex Exchanges is used for trading the exchange’s own-issued derivatives on shares, share indices, interest rates, loans and volatility. Among others, the product range covers derivatives based on Swiss underlying assets. Scoach specialises in structured products issued by banks and other financial intermediaries. Repo transactions in Swiss francs can be conducted on the Eurex Repo trading platform.

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krona, Hong Kong dollar, Korean won, New Zealand dollar, South African rand, Israeli shekel and Mexican peso.

[66] For more detailed information on CLS, see the corresponding chapter in the second volume of this publication.

SIX x-clear Ltd is the only Swiss-domiciled central counterparty. It currently offers clearing services for equities and ETFs traded on SIX Swiss Exchange, on the London Stock Exchange and on multilateral trading facilities such as UBS MTF and Equiduct. Under certain circumstances, x-clear also acts as CCP for off-order-book trades that are concluded outside the central order book of SIX Swiss Exchange. The financial instruments traded on SIX Swiss Exchange can also be cleared through the UK-domiciled LCH.Clearnet Ltd. Eurex Clearing Ltd, which is incorporated in Germany, acts among other things as a CCP for derivatives based on Swiss underlying assets traded on Eurex Exchanges.

Many financial instruments, including most of the equities, bonds and ETFs issued under Swiss law as well as the derivatives traded in Scoach's Swiss market segment, are held in custody by the CSD SIX SIS Ltd. Transfer of these instruments takes place in SECOM, the securities settlement system operated by SIX SIS Ltd.

There are no systems in Switzerland that provide only trade confirmation services, nor are there any trade repositories as of the end of 2010.

4.2 Central counterparties and clearing systems

4.2.1 SIX x-clear Ltd

Legal and Institutional framework

The most important Swiss legal provisions that are relevant for the CCP clearing services of SIX x-clear Ltd (x-clear) are the Federal Intermediated Securities Act (FISA), the Code of Obligations, the Banking Act and the Swiss Private International Law Act. The custody of certified and uncertified securities by custodians and the settlement of securities transactions is governed by the FISA, which came into force in January 2010. In particular, this Act governs the transfer of, or creation of, a security interest in intermediated securities and realisation of the collateral, and protects the rights of account holders in general, as well as in the case of the custodian's winding-up. Where x-clear's domestic participant becomes the subject of insolvency proceedings, its rights and obligations are primarily addressed under a special insolvency regime (Banking Act and related ordinances). Finality issues are governed by the Banking Act and the FISA by limiting the effects of insolvency measures on transfer instructions given to payment and securities settlement systems and thus protecting the finality of a transfer in the event of a system participant's insolvency.

Due to the cross-border nature of x-clear's services, legislation in other countries is also relevant. Conflict of laws issues are governed by the Swiss Private International Law Act and the respective international treaties (eg the Hague Securities Convention, the Lugano Convention).[67]

x-clear is a wholly owned subsidiary of SIX Group Ltd (for a description of SIX Group's governance, see Section 1.3.3). x-clear's Board of Directors is responsible for x-clear's overall management and consists of three members that are currently drawn from the members of SIX Group Board. The members of the Board of Directors of x-clear are appointed for a term of three years.

x-clear is licensed as a bank and supervised by FINMA. The SNB designated x-clear as important for the stability of the Swiss financial system. Therefore, x-clear is subject to the

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[67] The Convention on the Law Applicable to Certain Rights in Respect of Securities Held with an Intermediary, signed by Switzerland and the United States on 5July 2006, and the Convention of 16 September 1988 on Jurisdiction and the Enforcement of Judgments in Civil and Commercial Matters, respectively.

SNB's minimum requirements for systemically important payment and securities settlement systems. Further, x-clear has been granted the status of Recognised Overseas Clearing House (ROCH) by the UK Financial Services Authority. The Swiss and UK authorities coordinate their supervisory and oversight activities based on a Memorandum of Understanding.

x-clear's rules and regulations consist of the General Terms and Conditions of Business (GTCB) as well as exchange-specific GTCB. They define among other things membership and suspension criteria, default procedures, settlement procedures, and margin and default fund requirements. The rules and regulations are governed by the law that is applicable to the corresponding exchange: Swiss law in the case of SIX Swiss Exchange and English law for the London Stock Exchange (LSE). In the case of an MTF, independent of the country where it is based, its rules and regulations are governed by English law. In addition, each member signs contracts for pledging collateral to x-clear to cover margin and default fund requirements. All pledge contracts are governed by Swiss law irrespective of the location of the exchange.

In 2006, x-clear signed the European Code of Conduct for Clearing and Settlement. In this self-regulatory agreement, European trading platforms, CCPs, CSDs and settlement institutions agree to grant reciprocal access to their services and create transparency with regard to their terms and conditions. The objective is to facilitate effective competition with regard to the trading, clearing and settlement of equities.

Participation

Banks and securities dealers from Switzerland and abroad that are subject to adequate regulation and supervision may become members of x-clear. In addition, they must fulfil certain technical and operational requirements. There are two types of membership in x-clear. Members are either Individual Clearing Members (ICMs) or General Clearing Members (GCMs). An ICM may only settle its own transactions via x-clear, whereas a GCM can also settle transactions for other stock exchange participants which are not members of x-clear (Non-Clearing Members, NCMs). At the end of 2009, x-clear had 74 members (of which 19 were foreign clearing members): out of these 74 members, 13 were GCMs (providing access to 45 NCMs) and 61 were ICMs.

Types of transactions

x-clear acts as a CCP for transactions in Swiss, UK and other foreign equities, ETFs and Swiss bonds traded on the SIX Swiss Exchange, LSE and MTFs such as UBS MTF and Equiduct. Under certain circumstances, x-clear also provides CCP clearing for transactions on SIX Swiss Exchange which are concluded outside the central order book (off-order-book trades).

Operation of the system

x-clear provides CCP clearing through an open offer for all its clearing members that execute a buy or sell order with clearing-eligible securities. In so doing, x-clear becomes the buyer to every seller and the seller to every buyer. Thus, the two trading partners do not have any obligations towards each other but both enter into a contract with x-clear.

Between the execution of buy and sell orders and the settlement of all obligations (which is typically three days later), x-clear is exposed to counterparty risk. Members can optionally reduce settlement instructions by netting their trades per ISIN. x-clear initiates settlement of cleared transactions on the settlement day through its account relationships with SIX SIS Ltd, which is also a subsidiary of SIX Group Ltd. If a member fails to deliver the securities on the day of settlement, x-clear may initiate a buy-in or securities borrowing process. A late settlement fee is applied for trades conducted at the SIX Swiss Exchange. In any case, the selling x-clear member will be liable for any third-party cost.

For the purpose of transferring margins, x-clear opens collateral accounts (cash and securities) for each of its members at SIX SIS Ltd in the name of x-clear. Cash transfers resulting from margin calls of x-clear are executed through different settlement channels: Swiss franc cash transfers to fulfil margin calls can be executed in SIC (in central bank money) or via cash accounts at SIX SIS Ltd. Cash transfers in pounds sterling and euros to fulfil margin calls can be executed via accounts at SIX SIS Ltd or x-clear's authorised UK payment bank.

Risk management

The participation requirements are described in x-clear's GTCB. The following trading members may be admitted as members of x-clear: Swiss and foreign banks, and Swiss and foreign securities dealers. Foreign participants must be subject to regulation and supervision similar to that in Switzerland. x-clear further requires both types of participants to have appropriate risk management procedures and an effective internal control system. Every participant must have an internal audit department that is independent of management.

Margins to be posted with x-clear are calculated on the basis of participants' trading positions of clearing-eligible securities. x-clear aims at setting margins high enough to be able to cover the expected loss incurred in the event of a member default in 99% of cases. Compliance with this requirement is verified by backtesting. Members must cover their margin requirements by depositing collateral (cash or securities). In the event of a shortfall, x-clear automatically triggers a margin call, which must be met in the form of money within 60 minutes.

The margins consist of initial margins and variation margins:

– Initial margins are calculated on the basis of the net position per security and its volatility (using a historical value-at-risk model). Opposing positions between different securities are partially netted and lead to a reduction in the initial margins. Initial margins are multiplied using a risk coefficient which takes into account the member's credit rating and large one-sided net positions. Initial margins are recalculated immediately after each purchase or sale made by the respective member.

– Variation margins cover the price movements of securities after completion of the trade and are usually calculated on an hourly basis.

In addition, x-clear has established a default fund, which – in combination with the margins – is sufficient to cover the loss that would occur under extreme but plausible market conditions if the largest and/or second largest member were to default. Compliance with this requirement is also tested on a regular basis using stress tests. Separate default funds have been established for SIX Swiss Exchange and LSE. For UBS MTF and Equiduct a common default fund is established. The contribution calculated for each member depends on the average sum of open positions over the past three months as well as the membership category (ICM or GCM).

If x-clear suffers a loss due to the default of a member, the following defence lines are applied in order of listing:

– x-clear draws on margins posted by the defaulting member based on its trading position in the affected stock exchange;

– the defaulting member's contributions to the default fund are deployed;

– after that, x-clear uses part of its available provisions, followed by the default fund (ie the contributions of other members);

– in a further step, the surviving members are obliged to replenish the default fund;

– the last financial resources to be used to cover a loss from a default are the remaining provisions, the capital stock and the reserves of x-clear.

Links to other systems

x-clear provides clearing services for all clearing-eligible securities that are traded on the SIX Swiss Exchange or LSE. It has close links with SIX SIS Ltd, which operates all collateral accounts and manages the settlement process on behalf of x-clear.

x-clear and LCH.Clearnet Ltd have an inter-CCP link in place to serve SIX Swiss Exchange and LSE, for which both act as a CCP (competitive clearing). Their relationship is governed by a Master Clearing Link agreement that establishes a peer-to-peer structure in which both act as “Cooperating Clearing Houses” in relation to the clearing of transactions where one clearing member uses x-clear and the other clearing member uses LCH.Clearnet Ltd as its CCP. The Master Clearing Link agreement states that both parties mutually recognise their risk management models. Both CCPs provide margins to each other to cover their mutual exposures based on the inter-CCP trade flow.

Pricing

x-clear’s fee schedule is based on the credit rating of the member and the monthly transaction volume of the participant’s transactions cleared by x-clear.

Major ongoing future projects

x-clear plans an expansion of its clearing services to foreign cash equity markets as well as other financial instruments (eg markets in securities borrowing and lending as well as carbon emission permits). In accordance with these plans, x-clear is in talks with various CCPs for setting up interoperability arrangements.

4.2.2 Eurex Clearing Ltd

Eurex is owned in equal parts by Deutsche Börse Ltd and SIX Swiss Exchange. It operates Eurex Clearing Ltd (Eurex Clearing), Eurex Exchanges and the trading platforms Eurex Bonds and Eurex Repo.

Eurex Clearing is incorporated in Germany and licensed as a credit institution under the supervision of BaFin pursuant to the German Banking Act. The Deutsche Bundesbank cooperates and coordinates with BaFin in the supervision and oversight of Eurex Clearing. The UK Financial Services Authority has granted Eurex Clearing the status of Recognised Overseas Clearing House in the United Kingdom. The SNB designates certain functions of Eurex Clearing as important for the stability of the Swiss financial system. This relates to the clearing of derivatives denominated in Swiss francs or based on Swiss underlying assets that are traded on Eurex Exchanges. To this end the Swiss and German authorities are currently establishing a Memorandum of Understanding for the coordination of and cooperation in the supervision and oversight of Eurex Clearing.

For a detailed description of Eurex Clearing, see the chapter on Germany in the second volume of this publication.

4.2.3 LCH.Clearnet Ltd

LCH.Clearnet Ltd (LCH) is a wholly owned subsidiary of LCH.Clearnet Group Ltd. The majority shareholder of the group are its users followed by minority holdings of diverse exchanges.

It is regulated by the UK Financial Services Authority as a ROCH under the Financial Services and Markets Act 2000. It is also licensed as a Derivatives Clearing Organization in the USA and subject to Commodity Futures Trading Commission rules and the US

Commodity Exchange Act. It holds temporary exemptive relief from the U.S. Securities and Exchange Commission to clear Credit Default Swap Indices in the U.S. The SNB designates certain functions of LCH to be important for the stability of the Swiss financial system. This entails the clearing of equities at the SIX Swiss Exchange. To this end the Swiss and UK authorities have established a Memorandum of Understanding for the coordination and cooperation in the supervision and oversight of LCH.

For a detailed description of LCH, see the UK chapter in the second volume of this publication.

4.3 Securities settlement systems

4.3.1 SIX SIS Ltd

Legal and Institutional framework

The most important Swiss legal provisions that are relevant for the custody and settlement services of SIX SIS Ltd (SIS) are the FISA, the Debt Enforcement and Bankruptcy Act, the Code of Obligations, the Banking Act and the Private International Law Act. The custody of certified and uncertified securities by custodians and the settlement of securities transactions is governed by the FISA, which came into force in January 2010. In particular, this Act governs the transfer of, or creation of, a security interest in intermediated securities and realisation of the collateral, and protects the rights of account holders in general, as well as in the case of the custodian's winding-up. Where SIS's participant becomes the subject of insolvency proceedings, its rights and obligations are addressed under insolvency laws, ie the Swiss Debt Enforcement and Bankruptcy Act; where a participant operates under a bank (or securities dealer) licence, a special insolvency regime applies (Banking Act and related ordinances). Finality issues are governed by the Banking Act and the FISA by limiting the effects of insolvency measures on transfer instructions given to payment and securities settlement systems and thus protecting the finality of a transfer in the event of a system participant's insolvency.

Due to the cross-border nature of SIS's services, legislation in other countries is also relevant. Conflict of laws issues are governed by the Swiss Private International Law Act and the respective international treaties (eg the Hague Securities Convention, the Lugano Convention).[68]

SIS is a wholly owned subsidiary of SIX Group Ltd (for a description of SIX Group's governance, see Section 1.3.3). SIS's Board of Directors is responsible for SIS's overall management and consists of three members who are currently drawn from the members of SIX Group Board of Directors. The members of the Board of Directors of SIS are appointed for a term of three years.

SIS is a bank supervised by FINMA. The SNB considers SIS to be important for the stability of the Swiss financial system. Therefore, SIS is subject to the SNB's minimum requirements for systemically important payment and securities settlement systems.

SIS's basic rules and regulations consist of the General Terms and Conditions, the Service Contract and the Market Guide. They define among other things membership and suspension criteria, settlement procedures, management of custody and money accounts, and finality of settlement. Additional agreements cover products and services that are not

[68] See footnote 68.

covered by the basic rules and regulations (eg repo trading, securities lending and borrowing).

In 2006, SIS signed the European Code of Conduct for Clearing and Settlement. In this self-regulatory agreement, European trading platforms, CCPs, CSDs and settlement institutions agree to grant reciprocal access to their services and create transparency with regard to their terms and conditions. The objective is to facilitate effective competition with regard to the trading, clearing and settlement of equities.

Participation

Banks and securities dealers from Switzerland and abroad that are subject to adequate regulation and supervision may become members of SIS. In addition, some stock exchanges and trading platforms, clearing houses, PostFinance, the Swiss Old Age and Survivors' Insurance Fund (AHV/AVS), the SNB and some insurance companies participate in SIS. In total, SIS has around 400 members. A participant must fulfil a number of requirements, including the demonstration of adequate regulation as well as adherence to the contractual framework setting out the rights and obligations of participation.

Types of transactions

SIS acts as the CSD and settlement institution for the following Swiss securities: equities, government and private sector bonds, money market instruments, ETFs, conventional investment funds, structured products, warrants and other derivatives. Apart from providing custody and settlement for Swiss securities, SIS acts as global custodian and offers its participants access to custody and settlement in over 50 foreign financial markets. At the end of 2009, the value of securities held at SIS was CHF 2.8 trillion. In addition, SIS provides ancillary services such as securities lending and borrowing, tri-party repo or payment and cash management services.

Operation of the system

SIS operates the securities settlement system SECOM, which operates nearly 24 hours on bank working days. It provides custody and settlement of tradable financial instruments. Depending on the instrument, the transactions are transmitted to SECOM either from a trading platform, from CCPs or from the trading parties themselves (or their settlement banks). Under certain circumstances, these settlement orders may already have been matched; other instruments (such as, for example, over-the-counter instruments) are matched in SECOM. All SIS participants are linked to SECOM via an online interface, which can be set up either via a computer-to-computer connection or by using SIS's own webMAX User Device. Access is also possible via SIS Web Services, a browser-based user interface.

On the settlement date, the transactions are settled by means of a delivery-versus-payment (DVP) mechanism. ***Swiss financial instruments*** are transferred in SECOM, while the related payment is made simultaneously, either through the SIC system or through the SIS money accounts in SECOM. The latter route is taken if neither trading party is a SIC participant. If only one of the trading parties is a SIC participant, SIS will act as correspondent for the other trading party and provide the connection to SIC through its own SIC account. The DVP mechanism ensures that the payment takes place if – and only if – the financial instruments are transferred. To this end, SECOM begins by reserving the appropriate financial instruments in the seller's custody account and generates a payment instruction to SIC, or to the internal payment system in SECOM. SIC (or SECOM) checks whether the purchaser has sufficient funds on account. If not, the payment instruction is held pending in a queue. As soon as sufficient funds are available, the payment is released and a message to SECOM ensures that the financial instruments that had been reserved are irrevocably and unconditionally transferred from the seller to the purchaser.

For settlement of ***foreign financial instruments*** SECOM uses the link to the foreign ultimate depository that may be direct, or indirect via a local custodian. In the case of a direct link, SIS is able to offer its customers custody and settlement of the foreign financial instruments by holding an omnibus account with the foreign ultimate depository. However, in some cases, a direct link is not possible, either for regulatory reasons, or because it is excessively costly, or because it is inopportune in view of the restricted array of services provided by the ultimate depository. In such cases, SIS uses a custodian located in the foreign market – typically a local bank – in order to secure access to the foreign ultimate depository. Depending on the set up, either the local custodian will be responsible for the settlement of both the funds leg and the securities leg of a trade, or SIS will use two different institutions. Situations where the funds leg of a trade is to be settled in euros constitute a special case. Such transactions can be settled through euro accounts held in SECOM, via SIS correspondents in the euro area, or through the link between SECOM and euroSIC. If both counterparties hold the foreign financial instrument in custody with SECOM, settlement can be internalised. In practice, this means that the securities leg and the funds leg of a trade can be settled respectively in the counterparties' own custody accounts and the foreign currency accounts held in SECOM. In the last few years, SECOM's internalisation rate in international business has been almost 30%.

Risk management

SIS has taken various measures to reduce and, where possible, eliminate the risks in connection with custody and settlement – both for its participants and for itself. In the settlement and custody of ***Swiss financial instruments*** SIS acts as agent only and facilitates settlement but is not itself a counterparty and therefore does not bear any credit risks. The irrevocable settlement of transactions according to the DVP principle eliminates principal risks for its participants. Custody risks are reduced for the participants due to legal protection of the rights of account holders in case SIS becomes subject to insolvency proceedings. Participants' liquidity risks are reduced owing to facilities available for obtaining securities (securities lending and borrowing) and funds (SIS current account advance facilities).

For the custody and settlement of ***foreign financial instruments*** SIS bears settlement bank risks in case of a default of the foreign currency correspondent.[69] SIS manages this risk by requiring correspondent banks to fulfil specific requirements set by SIS and by limiting the size of overnight cash positions. The principal risks for its participants are managed through settlement according to the DVP principle. SIS holds foreign securities in custody with custodians in the name and at the risk of its participants. SIS participants' custody risks are reduced through requirements that foreign custodians are obliged to meet and through daily reconciliation of SIS's own records with its holdings of securities in custody with foreign CSDs. Participants' liquidity risks are reduced owing to facilities available for obtaining funds (such as SIS current account advance facilities in foreign currencies). Credit risks related to short-term exposures of SIS towards its participants are managed via limits and collateral requirements.

[69] The financial institution that settles the funds leg of a foreign financial instrument transaction for SIS and its participants is described as a foreign currency correspondent. Depending on the country and currency in question, this institution may be a central depository or a bank.

Links to other systems

SIS offers direct links to other international central securities depositories (ICSDs) and CSDs. These currently comprise the following institutions:

- Clearstream Banking, Luxembourg and Frankfurt
- Euroclear, Brussels
- Euroclear Netherlands
- Euroclear France
- Euroclear UK & Ireland Limited, London
- Monte Titoli, Milan
- Oesterreichische Kontrollbank AG, Vienna (OeKB)
- DTCC, New York (not automated, only in use for 2 ISINs)
- Keler, Budapest

SIS is a founding member of Link Up Markets, which facilitates the interoperability between (I)CSDs for cross-border securities custody and settlement. Apart from SIS, seven other CSDs are active in this network: Clearstream Banking Frankfurt, Cyprus Stock Exchange, Hellenic Exchanges S.A., IBERCLEAR, Oesterreichische Kontrollbank AG, VP SECURITIES (Denmark) and VP LUX.

Furthermore, SIS has a network of correspondents in all major markets around the globe, allowing it to provide access to over 40 foreign markets through indirect links.

Pricing

SIS publishes the prices of its services on its website displaying fee schedules for settlement (in-house and cross-border) and custody (Switzerland and cross-border) as well as pricing models for compensations and new issues.

Major ongoing and future projects

Based on the recent developments in the clearing and settlement landscape in the European Union (eg Target2-Securities), SIS is evaluating the implications for its services and potential need for action.

4.4 The use of the securities infrastructure by the Swiss National Bank

The SNB makes intense use of the securities infrastructure described above. The Eurex Repo platform, which was introduced in 1998, is used by the SNB for its monetary policy operations. Auctions are typically conducted on a daily basis. The custody and settlement of the securities are performed by SIS while the related payment is made simultaneously through SIC. Since October 1999, the SNB has also offered intraday repos that are settled through these infrastructures. Furthermore, the issuance of SNB's interest-bearing debt certificates (SNB Bills) as well as the issuance of money market debt register claims and bonds on behalf of the Swiss Confederation take place through the Swiss securities infrastructure described above.

In addition, the SNB relies on the services provided by SIS for its other business activities (eg custody services for asset management).