

Embargo to 18.30, 3 November 2011

**The strong franc and the future of
Switzerland's financial market infrastructure:
two current challenges for the SNB**

Jean-Pierre Danthine

Member of the Governing Board

Swiss National Bank

Money Market Event

Geneva, 3 November 2011

The speaker would like to thank Marlene Amstad, Anna Faber, Peter Kuster, Angelo Ranaldo, Andy Sturm, Dominik Salierno and Andreas Wehrli for their valuable support in drafting this speech and preparing this presentation.

Introduction

In today's global economy, central banks face no shortage of challenges. Of the many issues we confront, I will discuss two that are currently of particular relevance to the Swiss National Bank (SNB). The strength of the Swiss franc is on everyone's mind. This summer it became a predicament of unprecedented dimensions and it continues to put tremendous pressure on the Swiss economy. I will address this topic in the second part of my speech.

By contrast, the challenge I will discuss first – the future of Switzerland's financial market infrastructure (FMI) – is not making headlines at present. Essentially, the term FMI encompasses the exchanges, central counterparties, settlement systems, central securities depositories and other service providers which support the financial system. This infrastructure is central to the functioning of financial markets. It is crucial for the implementation of monetary policy and participants' access to central bank liquidity.

As long as the FMI functions smoothly, it rarely attracts public attention. But, from a long run perspective, its performance is highly significant. Internationally, many changes are taking place in the FMI arena and it is vital that our FMI – often referred to as the 'plumbing of our financial markets' – continues to serve Switzerland's best interests in the future. My goal this evening is to raise awareness of the FMI's importance and of the need to develop a strategy to ensure that it remains an asset for us in the future.

Part I: Financial market infrastructure

Overall, the key elements of the Swiss FMI function well. In the recent crisis, the resilience of our infrastructure has been remarkable. But, increased competition, international regulatory changes, growing trade volumes and, on occasion, heightened volatility imply that it will have to evolve in order to remain effective. I will hence highlight three aspects of our FMI tonight: its relevance, its strengths and the challenges it faces.

The importance of a safe and efficient financial market infrastructure

The summer of 2011 will take its place in history as a period of considerable market uncertainty and volatility. On three occasions we saw daily moves of the Swiss franc against the Euro which were among the most extreme experienced since the inception of the euro in 1999. The most significant one day move of 3.2% occurred on 9 August. The same day

the Swiss franc reached a record high, peaking close to parity, at 1.0073 per euro.¹ These extreme movements on the foreign exchange market were also accompanied by high volatility in equities and bond markets. Between July and early August, the equity volatility index, VIX,² abruptly doubled from less than 20% to over 40% and the broad bond volatility index, the MOVE Index,³ went from around 85 to almost 120 base points.

This extreme level of volatility had a huge impact on front office operations. It also affected 'post-trade' processes in the back office, where daily average trading volumes were over three times their average this August. This shows the pressure the FMI is under. It also highlights the importance of ensuring that it can cope with such significant increases in trading volumes. After all, as trade volumes swell, so do operational risks. Thankfully, there have been few instances in which the FMI, or a lack of effective infrastructure services, were at the root of any market crashes. Let me, however, highlight three instances in which the system has been put to the test.

The first case was referred to as the 'Paperwork Crisis' of 1968 and 1969. Daily trading on the New York Stock Exchange (NYSE) went from two million shares a day in the early 1960s to twelve million by the end of the decade. Meanwhile, stock trades continued to be settled by the physical delivery of engraved stock certificates between brokerage firms. As trading volumes soared, the post-trading industry could not keep up with the paper blizzard. By 1968, the NYSE was forced to close every Wednesday for six months to catch up with the paperwork. It then reduced its official operating hours for a further six months to enable its member brokerage firms to keep pace with the trading volumes.⁴ Technology subsequently caught up.

A second example is 'Black Monday' when, on 19 October 1987, stock markets crashed all over the world. That day, the Dow Jones Industrial Average dropped by over 22%. One factor that increased the severity of this market crash was the difficulty people faced in obtaining reliable information. The record trading volumes on Black Monday – three times the daily average – overwhelmed many systems. As the Brady Report put it: "On the NYSE, for example, trade executions were reported more than an hour late, which ... caused

¹ Measured using the Electronic Broking Services (EBS) currency trading platform.

² The VIX tracks volatility on the S&P 500 Index.

³ Merrill Lynch Option Volatility Estimate Index.

⁴ "History of New York Stock Exchange Holidays," New York Stock Exchange, revised in January 2011.

confusion among traders. Investors did not know whether limit orders had been executed or whether new limits needed to be set.”⁵

In the years since 1987, both trading and post-trade technology have come a long way. Today, trading algorithms buy and sell hundreds of thousands of times in a single second, leading to increased trading volumes. This leads to my third example, the ‘Flash Crash’ of 6 May 2010. That day, the Dow Jones Industrial Average plunged almost 1,000 points in five minutes, only to regain almost 600 points twenty minutes later. Full explanations for this turn of events have yet to be determined, but a report by U.S. regulatory authorities, the Commodity Futures Trading Commission and the Securities and Exchange Commission, concluded that: “One key lesson is that under stressed market conditions, the automated execution of a large sell order can trigger extreme price movements, especially if the automated execution algorithm does not take prices into account. Moreover, the interaction between automated execution programs and algorithmic trading strategies can quickly erode liquidity and result in disorderly markets.”⁶ Technological developments would therefore seem to be like a dual-edged sword. On the one hand, they increase efficiency and reduce costs. On the other, they intensify the severity of potential market crashes.

Such examples illustrate the importance of the FMI for the effective functioning of financial markets as a whole. I would now like to explain why it matters to the SNB. To fulfil its mandate, the SNB is involved on three levels. First, as a market participant with a special role because it uses market transactions to implement monetary policy. Second, it acts as the ‘system manager’ of the Swiss Interbank Clearing (SIC) payment system, making sure that high value transactions can be made with central bank money. In this function, the SNB also monitors daily operations and is responsible for crisis management in the event of disruptions or incidents. Third and finally, the SNB oversees the systemically important elements of the FMI, monitors developments and strives to identify areas of tension or imbalance that could jeopardise the stability of the system. These observations make it clear that a well-functioning, safe and efficient FMI is critical to the central bank.

⁵ Brady Report 1988, Study III, p. 21. Cited in, “Marc Carlson: A Brief History of the 1987 Stock Market Crash with a Discussion of the Federal Reserve Response,” p. 9.

⁶ “Findings Regarding the Market Events of May 6, 2010,” Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues, 20 September, 2010.

The strengths of Switzerland's FMI and its collaborative roots

Switzerland's FMI has been effective to date. I would now like to describe its strengths and discuss their foundations. The strong suit of the Swiss FMI is the integration of all back-office components in a chain of systems known as the Swiss value chain (SVC).⁷ The SVC allows complete electronic integration of different types of platform: trading systems, securities settlement systems, central counterparties and payment systems.

Most notably, as the SVC integrates several processes, it is fast, efficient and safe. In equity trading, 'straight-through processing' has technically reduced 'time to settlement' to as little as four seconds, though in market practice the settlement cycle for equities is three days. Domestically, the system is inexpensive and the price of trading has decreased significantly in recent years. 'Straight-through processing' has also been applied to and strengthened the Swiss repo market, where not a single 'fail', i.e. a settlement that is one or more days late, has occurred in the interbank repo transactions since May 2009.

In terms of automation, the integrated Swiss approach compares favourably to other systems of its kind. Despite the omnipresence of electronic systems worldwide, only one third of all repo transactions in Europe are in fact handled by automatic trading systems such as BrokerTec, Eurex Repo or MTS. In several national markets, most steps are still performed manually.⁸

As the Swiss value chain was built in the mid-1990s, it was a frontrunner in the move towards straight-through processing. It is still a 'state-of-the-art' set-up, but this is no time to be complacent in view of the ever-increasing strengths of competing systems. Given its high level of performance, it is interesting to observe that the Swiss value chain is the result of a typically Swiss form of collaboration, known as '*Gemeinschaftswerk*'. The principle of '*Gemeinschaftswerk*' has been vital in shaping and maintaining Switzerland's FMI. It has provided all relevant private and public stakeholders with a voice in the process – from the SNB to large banks with an international focus, to smaller and regional institutes.

⁷ It consists of four elements: i) the electronic trading platforms, SIX Swiss Exchange and Eurex (derivatives); (ii) the central counterparty SIX x-clear; (iii) the securities settlement system SECOM; and (iv) the payment systems, Swiss Interbank Clearing (SIC) and euroSIC. Also directly integrated are the central counterparties, London Clearing House (LCH) and Eurex Clearing, as well as the euroSIC payment system.

⁸ Cf. "International Capital Market Association: European repo market survey." Number 18, conducted December 2009, published March 2010. p. 10. Cf. also BIS, "CPSS: Strengthening repo clearing and settlement arrangements," published September 2010., pp. 10-12.

The twelve year history of the Swiss repo market illustrates this principle at work. At the end of the 1990s, commercial banks, financial infrastructure providers and the SNB collaborated closely to develop the repo market. The resulting electronic Eurex Repo trading platform⁹ standardised repo transactions. Crucially, since 1999 the Eurex Repo trading platform has been linked to the SECOM securities settlement system, which is connected to the SIC real-time gross-settlement payment system. Not only does this make straight-through processing possible, the system also sets itself apart by integrating central bank repos and interbank repos on the same platform.

The SIC payment system, whose technical and operational components are handled by a subsidiary of the SIX Group, is also a product of the '*Gemeinschaftswerk*'. In contrast to this successful public-private partnership, in other countries most large-value payment systems belong to the central banks. On a functional level, vertical integration thus appears to be more complete in Switzerland than in other European markets. In Germany and the United Kingdom, for example, the private firms which dominate the FMI (Deutsche Börse Group and London Stock Exchange Group, respectively) do not operate the national payment systems. Conversely, on an organisational level, in the 1990s and early 2000s demutualisation occurred in most European countries, shifting governance away from a 'user-owned,' 'user-governed' model towards an investor-centric structure.

The changing world of FMIs

As I have inferred, the world of FMIs and their stakeholders is in a state of flux. It is hence crucial that we consider how such changes influence the Swiss market and how they will do so in years to come.

A mere glance at the news headlines illustrates the extent to which established financial and economic entities are evolving as never before. There are several examples of shifts in the landscape of trading venues, which stem from various factors, such as regulatory changes, e.g. MIFID,¹⁰ the trend towards demutualisation and increased international competition. These include the announced merger of Deutsche Börse and NYSE, the sale of

⁹ In October 2000, the SWX-Repo was integrated into Eurex under the name Eurex-Repo.

¹⁰ Markets in Financial Instruments Directive: This European law aims to increase competition and consumer protection in investment services. As of 1 November 2007, it replaced the Investment Services Directive.

SIX Group's Eurex-stake to Deutsche Börse and a move of trading volumes away from 'national' quasi-monopolies towards multilateral trading venues such as multilateral trading facilities (MTF). Some estimates indicate that as much as 25% of equity trading volumes are now handled by these new players. Because of such developments, in the Swiss Blue-Chip segment, SIX Swiss Exchange's average market share declined from over 80% in 2009 to around 70% in 2010.¹¹

Post-trade infrastructure is also under pressure to evolve. Notably, the Financial Stability Board recommends a wider adoption of Central Counterparties (CCPs) in the over-the-counter (OTC) derivatives markets. By mitigating counterparty risk, increasing transparency and limiting the likelihood of contagion in these complex markets, CCPs reduce systemic risk. Regulators in both the European Union and the United States are thus promoting increased use of CCPs. A second example, upon which I would like to dwell, is the European Central Bank's (ECB) 'TARGET2-Securities (T2S)' project, which has attracted much attention in the industry. For those of you who are unfamiliar with the initiative, it aims to establish a single venue where securities may be settled against the euro and possibly against other currencies, partially replacing the existing national settlement infrastructures.

For the SNB, as Switzerland's central bank and monetary authority, the ECB's project raised the issue of whether the Swiss franc should be included as a settlement currency on the T2S platform. Although the formal decision was solely the responsibility of the SNB, in the spirit of the '*Gemeinschaftswerk*' the central bank consulted all stakeholders (including the SIX Group) before reaching an informed decision. On the basis of the stakeholders' cost-benefit analysis, which highlighted the complexity of the market infrastructure challenges confronting the Swiss market, the SNB decided not to include the Swiss franc as a T2S settlement currency at this stage¹².

That said, though Switzerland decided to stand back from this process, T2S will nevertheless impact the Swiss market and accelerate structural reforms of Switzerland's FMI, which will in turn affect our money market operations. After all, securities denominated in foreign currencies are accepted as collateral on the Swiss repo market. In fact, collateral denominated in euros account for about 50% of the posted securities. In the future,

¹¹ SIX Group Media Release, 15 March 2011.

¹² The Bank of England has reached the same decision regarding the British pound.

settlement of these securities and potentially also of the securities denominated in other eligible currencies will involve some use of the T2S infrastructure.

What now?

The principle of '*Gemeinschaftswerk*' has served us very well of late. Its technical and economic efficiency has permitted a convergence of individual institutional interests with those of the Swiss financial centre. However, the environment in which Switzerland's financial market infrastructure operates is now changing considerably. To remain reliable, efficient and competitive, it must evolve. This is a challenge, not only for the SNB, but for all financial markets, that is all stakeholders in the '*Gemeinschaftswerk*'. The Swiss financial centre urgently needs to agree upon a clear proactive strategy to ensure that Switzerland's FMI remains competitive in the long-term. Should the '*Gemeinschaftswerk*' not be the chosen *modus operandi* in the future, this issue could prove to be even more pressing.

Let me now conclude my thoughts on the plumbing of our financial markets and return to the front office to discuss the more prominent challenges on the foreign exchange market.

Part II: The strong Swiss franc

Since the breakdown of the Bretton Woods system in 1973 the Swiss franc has significantly appreciated against most major currencies. From this juncture, its value increased massively, in nominal terms, with respect to the US dollar, the British pound, and, in the relevant period, to the Deutschmark. Since the inception of the euro in 1999, the franc also appreciated against the euro – the currency of our primary trading partner, though the exchange rate was stable until the onset of the recent crisis.

Little can be gleaned from a comparison of the various currencies' nominal values, however. It does not take into account that the evolution of relative exchange rates stems, to a great extent, from a natural compensation for inflation rate differentials. This is particularly relevant to Switzerland, where we have experienced far less inflation than our commercial partners over the last thirty years. If this issue is accounted for, that is, in real terms, the Swiss franc can then be said to have appreciated by around 100% against the US dollar and 70% against the British pound since 1973 and by 14% against the Euro between 1999 and today.

We learn more if we take a multilateral viewpoint, based on the real effective exchange rate¹³. On a statistical basis, it can be argued that the Swiss franc's effective exchange rate has remained more or less stable, at least from 1990 until recently. This does not mean, however, that it has been constant. On the contrary, it fluctuates constantly around its average.¹⁴ You may recall, in particular, that for approximately three years in the mid-1990's it remained well above its long-term average, then peaking at 12% in 1995. Until now, this was the Swiss franc's most significant deviation from the long term average observed. In contrast, between 1999 and 2008, the real effective exchange rate generally remained below its long-term average. It had started to increase around August 2007, then gaining over 30% between that time and the end of June 2011.

With these numbers in mind, the additional changes registered this summer are quite extraordinary. Between early July and 9 August, when the Swiss franc reached its historic peak, its real value climbed another 17%. Estimates show that the currency was then almost 40% above its long-term average and more than 50% above its pre-crisis level.¹⁵

It can be argued that the Swiss franc is strong because the Swiss economy is faring well in absolute terms and, most importantly, in comparison with many of the country's neighbours. Indeed, the Great Recession was less pronounced in Switzerland than in most other developed economies. The ensuing recovery was also relatively dynamic. The Swiss economy was one of the first advanced economies to return to the pre-crisis level of GDP and, in striking contrast with many other countries, Switzerland emerged from the crisis with solid public finances. Indeed, this explains why, in the crisis years, the country's overall debt-to-GDP level fell below 40%. Exchange rate movements, like those observed this summer, strongly suggest, however, that such explanations do not suffice. Slow-moving economic fundamentals or macroeconomic drivers can almost certainly not account for the sudden large movements of our exchange rate in July and August. The Swiss franc's safe

¹³ This rationale and the figures that follow refer to the export-weighted real exchange rate (nominal rates which correct the gaps between price indexes and consumption), as published by the BIS.

¹⁴ It is worth noting that this long run average is a purely backward-looking statistical concept and not a forward-looking or equilibrium concept. We use it throughout as a statistical yardstick. The SNB does not endorse a specific equilibrium exchange rate level as the notion of equilibrium is model-dependent and thus not uniquely defined. Every model we know of concludes, however, that at CHF 1.20 per euro, the Swiss franc remains high.

¹⁵ This is an approximation of the real effective exchange rate, assuming constant weights and inflation differentials.

haven properties and financial market participants' perceptions that the risks to the global economy were extreme in size and uncommon in nature (and thus hard to evaluate) offer a far more complete explanation.

The unique safe haven properties of the Swiss franc are well recognised. They have rarely been as clearly demonstrated as in recent history. It is striking, for instance, that the price of gold in Swiss francs depreciated by approximately 5% between early 2011 and 2 August, while, in the meantime, the US dollar price of gold kept breaking one record after another. The Swiss franc's safe haven properties are also illustrated by the negative correlation between its movements and the price of risky assets, such as equity shares. Additionally, these movements are positively correlated with risk indicators, such as the VIX index. The Swiss franc's significant appreciation within a few hours of the first plane crash into Manhattan's twin towers on 11 September 2001 constitutes another vivid example of the strength of its safe haven properties.

While the Swiss franc's status as a so-called safe haven currency may be a testimony to the country's long history of stability, in times of global uncertainty on the financial markets, it is an essentially financial phenomenon which may inflict significant and potentially permanent damage upon the real economy. When financial forces push a currency so far away from its fundamental value so quickly, the consequences are very real. After all, most businesses do not work with margins that can absorb such extreme exchange rate fluctuations, in terms of both speed and level. The Swiss economy is very open and dependent on exports. Every second Swiss franc is earned abroad. The massive overvaluation of our currency this summer carried with it the risk of a recession and of deflationary developments. This is why the SNB concluded that it had to act in order to protect the economy and safeguard price stability.

On 3 August, the SNB announced that it would be aiming for a three-month Libor as close to zero as possible. This was to take immediate effect. It would also expand banks' sight deposits from their then level of around CHF 30 billion to CHF 80 billion. In two additional steps, on 10 and 17 August this quantitative easing policy was further expanded with an ultimate target of overall sight deposits in excess of CHF 200 billion. This significant increase in the supply of liquidity to the Swiss franc money market was achieved by discontinuing reverse repo operations and repurchasing outstanding SNB Bills, in a first

step, and entering into foreign exchange swaps and reinstating liquidity-providing repos afterwards. These operations exerted massive downward pressure on money market rates and expectations of future interest rates. They also caused the Swiss franc to weaken considerably. However, the increasing torrent of bad news about the global economic situation made their impact only temporary in nature. The massive overvaluation of the Swiss franc continued anew, posing an acute threat to the Swiss economy. On 6 September, the SNB hence announced that it would no longer tolerate a EUR/CHF exchange rate below a minimum rate of CHF 1.20. It also indicated that it would enforce this minimum rate with the utmost determination and was prepared to buy foreign currency in unlimited quantities, if necessary. Even at a rate of CHF 1.20 per euro, the Swiss franc remains high. It should continue to weaken over time. If the economic outlook and deflationary risks so require, further measures will be taken.

The decision to impose a minimum exchange rate was not taken lightly. It was a major step and has naturally elicited a wide variety of reactions. Today, I would only like to address one of them. Advocates of market efficiency claim that our intervention is misplaced as it interferes with the working of free markets. My first academic paper on the 'efficient market' hypothesis was published in 1977 and I remain convinced that the more moderate versions of this hypothesis are valid. In particular, I think investors should always start from the premise that the market is 'hard to beat' and that 'free lunches' are extremely rare. However, I also believe that the extreme form of market efficiency, according to which the market price always and immediately reflects and reveals the underlying fundamental value of the asset in question, has been disproved in multiple instances. Scholars have convincingly documented episodes of market overreaction, herd behaviour and momentum trading. There have also been numerous cases of what appeared ex-post to be manifest examples of mispricing in financial history, from the 'tulip mania' in Holland in the 1600s, to the recent house price bubble in the United States. One possible reason for this, which has been stressed in recent academic literature, is that investors who disagree with market valuations, and wish to trade on their convictions, have little chance of making a profit if the mass of ill-informed or irrational ('noise') traders is too large.

In the rare case of a safe haven currency, like the Swiss franc, there is an economic justification for the central bank attempting to limit the detrimental impact of safe haven

'financial' considerations on the real economy by, in a sense, accommodating demands for the safe haven. The safe haven effect leads to a form of Dutch disease which cannot leave the central bank indifferent. This term refers to the state of the Dutch economy following the discovery of natural gas in the North Sea in the 1980's. This significant discovery and the boom it generated in the energy-related sectors of the economy led to an overvaluation of the Dutch currency. This, in turn, had a severe negative impact on large sectors of the real economy which did not directly benefit from the discovery. There is, however, a difference between the 'Dutch disease' and the impact of the demand for a safe haven currency. In the second instance, the 'disease' takes on a pernicious form as it negatively affects the economy, without the latter benefitting from the initial positive effect of a newfound natural resource.

It can further be argued that safe haven flows in an environment marked by extreme uncertainty and a world-wide dearth of safe assets led to a profound disconnect between the value of the Swiss franc and the reality of the Swiss economy. The scale of this disconnect could in turn explain the extreme market volatility we have witnessed this summer. Indeed, another segment of the academic literature explains that, in such extreme market conditions, coordination problems can arise, causing so-called 'stabilizing investors' to remain on the sidelines instead of entering their trades, which would normally have a stabilizing effect. The intervention of the central bank is then viewed as a means of helping market participants to coordinate on valuations which are more in line with the real fundamentals. Today, the Swiss franc remains high and should therefore continue to depreciate in the future.

Conclusion

As I stated at the outset, we face no shortage of challenges. I have addressed two of them today. The Swiss franc was overvalued to such an extent that the SNB has been forced to take the extraordinary decision of setting a minimum exchange rate. This carefully considered decision reflects the extent to which we live in extraordinary times. Given the prevailing circumstances this summer, to the SNB, this seemed to be the only way in which the central bank could fulfil its mandate to ensure price stability while taking due account of economic developments.

Behind the scenes, the rapid and complex evolution of FMIs worldwide is a matter of long-term interest. This infrastructure is central to the functioning of financial markets. It is a challenge of primordial importance to the financial markets. Today, we are the beneficiaries of an effective infrastructure, in part thanks to the adoption of '*Gemeinschaftswerk*', a collaborative *modus operandi* which has permitted a near-perfect alignment of stakeholders' individual and collective interests. It cannot be taken for granted, however, and it is our collective responsibility to act. The '*Gemeinschaftswerk*' may not be the sole means of ensuring that progress is made but, in any case, a well-defined proactive strategy is called for if we are to rise to the challenges ahead.