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**LESSONS FROM THE CRISIS FOR
GLOBAL FINANCIAL MARKET INFRASTRUCTURE**

PHILIPP M. HILDEBRAND¹

VICE-CHAIRMAN OF THE GOVERNING BOARD

SWISS NATIONAL BANK

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1. Introduction

My topic today, as it has been in virtually every presentation I've given over the past two years, will be the financial system. However, for once I will not focus on the aspects of the financial system that have caused us the most concern in the past two years. I will therefore not refer to the excessive leverage in the financial industry going into the crisis or how frozen financial markets can be revived. Instead, I will focus my remarks on the financial market infrastructure, which provides the foundation of the global financial system.

Broadly speaking, financial market infrastructure consists of stock exchanges and trading platforms as well as post-trading systems for clearing and settling payments and financial instruments. While these technical facilities are seldom the focus of attention, they are crucial for the functioning of the financial system. Stable and effective payment and settlement systems help to ensure that the processing of transactions in the financial markets is safe and efficient.

These systems settle an enormous volume of business. For instance, approximately 1.5 million transactions with a total value of over CHF 220 billion are settled daily through Swiss Interbank Clearing (SIC), the most important payment system in Switzerland. In light of these figures, it is obvious that payment and settlement systems have the potential to shake the financial system to the core. We are therefore well advised to review the experiences gained in the past two years with respect to the global financial market infrastructure, and determine what needs to be done going forward. In doing this, and in the spirit of today's topic, I will also endeavour to shed some light on the relationship between self-regulation and regulation.

2. Appraisal of financial market infrastructure during the crisis

Let me begin with my conclusion. Throughout the financial crisis, the global financial market infrastructure has stood up very well and has helped to prevent the enormous uncertainty in the financial system from becoming even more pronounced. This favourable

assessment applies to the payment and settlement systems in Switzerland as well as to global financial market infrastructure. Ladies and gentlemen, this is not an achievement we should take for granted. It is mainly due to the fact that, in the years prior to the crisis, the financial sector has invested a great deal in enhancing financial market infrastructure.

In Switzerland, for example, a fully integrated infrastructure for trading, clearing and settling financial market transactions has been in place for many years. The core elements of this infrastructure, known as the Swiss Value Chain, are the Swiss stock exchange, the SECOM securities settlement system, the x-clear central counterparty and the SIC payment system. Integration of these infrastructures makes it possible, first, to standardise and automate the processes, which leads to considerable gains in efficiency. Second, risks relating to the technical aspects of the settlement process can be largely eliminated.

At the level of the global financial market infrastructure, the most important innovation of recent years has most certainly been the development of Continuous Linked Settlement (CLS). This system has been in place for some years and enables foreign exchange transactions to be settled almost free of risk. In particular, CLS allows to eliminate principal risk, which is often referred to as Herstatt risk.² This is the risk that one of the parties to a foreign exchange transaction meets its obligations, yet does not receive the countercurrency. Herstatt risk is thus a traditional counterparty risk. Given the significant increase in counterparty risk in the last two years, it does not require much imagination to picture what would have happened without CLS. Many trading partners would have feared (in some cases, rightly) that their business partners would not meet their obligations. This would have caused them to be wary of concluding any foreign exchange transactions at all. The associated drop in market liquidity would have significantly impacted banks' liquidity management and impaired the management of currency risk, with potentially devastating consequences.

² The term 'Herstatt risk' dates back to a German bank called Herstatt whose banking license was revoked in 1974. Before the opening of bankruptcy, various Herstatt counterparties had already transferred their liabilities in German marks originating from foreign exchange transactions. After closure, these counterparties waited in vain for the corresponding receipts in US dollars.

As you can see, innovation and investments in market infrastructure have paid off, especially during the crisis. From a regulatory point of view, it is worth noting that innovation and investments were often initiated by market participants themselves. This is true, for instance, for most of the developments in the Swiss Value Chain. These are primarily driven by the needs of the Swiss banks and they are also financed by the banks. Market participants have succeeded in coordinating their requirements and – as a private initiative – have developed joint solutions that ultimately benefit all parties. Thus, the Swiss Value Chain is an example of the way in which worthwhile systems can be developed in the area of financial market infrastructure without state intervention or regulatory measures.

However, in other cases – and I am thinking here, in particular, of the CLS example – it took a long time before the financial industry finally addressed problems that had long been acknowledged. The Herstatt risk had, in fact, been generally recognised since the mid-1970s. Because of the high volumes traded in the foreign exchange market, by the early 1990s, this risk had been identified as one of the most significant systemic risks in the global financial system. Nonetheless, central banks had to exert strong pressure in order to persuade market participants to allocate sufficient funds for the development and operation of CLS. Looking back at the experiences of the last two years, even market participants who were initially sceptical about the CLS system are now likely to have recognised its necessity. The rapid increase in the number of financial institutions settling their foreign exchange business through CLS certainly suggests this is the case.

3. Need for action

Notwithstanding the fact that payment and settlement systems have, on the whole, been a source of stability during the financial crisis, the existing financial market infrastructure is far from perfect. Financial markets will continue to innovate, and infrastructures must therefore continue to evolve.

Need for action exists on two levels. First, experiences gained in the past two years have shown that the existing payment and settlement systems can certainly be improved in a

number of areas. Second, there are important financial markets without suitable infrastructure. Let me explain these two points in more detail. I will begin with the existing financial market infrastructure.

At the end of the 1990s, financial market infrastructures were still largely a national matter. Each country had its own stock exchange and its own payment and settlement system. Both were more or less reserved for domestic participants. This has changed in recent years, particularly in Europe. Many financial infrastructures have been opened up to participants from other countries, while some infrastructure operators are attempting to penetrate new markets abroad. Switzerland provides a good example of these developments. Foreign financial institutions are now free to access the Swiss Value Chain directly, even if they have no representation in Switzerland. Simultaneously, x-clear – the central counterparty domiciled in Switzerland – is increasingly offering its services to stock exchanges and trading platforms which are located outside Switzerland. As a result, a large proportion of participants in the infrastructures integrated in the Swiss Value Chain are located outside of Switzerland.

In normal times, cross-border access to market infrastructures undoubtedly contributes to market efficiency. During the crisis, however, a number of practical problems became apparent, in particular in connection with the bankruptcy of Lehman Brothers. Before its demise, Lehman and some of its subsidiaries held interests in many payment and settlement systems around the world. After the collapse, confusion was so great that many operators of infrastructures did not know which legal entities were affected by the bankruptcy. As a result, it was unclear as to whether they should still settle Lehman transactions or those of its subsidiaries. This example demonstrates that it is crucial that operators of payment systems or central counterparties are immediately informed by the supervisory authorities when specific supervisory measures are taken against system participants. Only if they receive this notification can the infrastructure operators react appropriately and take immediate steps to initiate the procedures foreseen for such an eventuality. Although the information channels between the authorities and the operators of infrastructures generally

function well at the national level, there is clearly room for improvement in the cross-border area.

Another area where I see potential for improvement is the relationship between the operators of financial market infrastructures and the central banks. From the SNB's perspective, another lesson learnt from the crisis is that central banks need to review the services they provide to financial market infrastructures. In particular, opening an account with the central bank is a prerequisite if financial market infrastructures are to settle their transactions using central bank money and, if required, deposit their liquidity holdings at the end of the day with the central bank. Access to standing facilities – intraday liquidity and the liquidity-shortage financing facility – can also help limit settlement risks and strengthen some financial market infrastructures' own liquidity risk management.

During the course of the financial crisis, a number of central banks have made it increasingly easy for financial market infrastructures to access their services. In Switzerland, even before the crisis, domestic operators of such systems were permitted to open an account with the Swiss National Bank and to obtain access to standing facilities, if needed. To date, operators domiciled outside Switzerland were required to have the status of a bank. At present, this requirement is under review. In any case, the SNB will retain the requirement that operators of foreign financial market infrastructures are subject to appropriate regulation.

Let me now turn to the second point, which is of more fundamental importance and cause of a bigger concern. This is the fact that, time and again, there are very fast-growing financial markets which, for a long period of time, lack any appropriate infrastructure. As I mentioned before, this was the case for the foreign exchange market until just a few years ago.

Currently, the OTC derivatives market is the area which most urgently requires attention. In the past 15 years, growth in this largely unregulated market has exploded and yet no suitable infrastructure for clearing and settling transactions has been developed. The OTC

derivatives market therefore provides us with a good – or perhaps we should say, bad – example of the fact that self-regulation does not always work. As in the case of the foreign exchange market, several supervisory authorities and central banks needed to intervene decisively. Under the leadership of the Federal Reserve Bank of New York, they obliged market participants to undertake the necessary steps to remedy this problem.

Some initial and encouraging progress has indeed become evident over the course of the past two years. For instance, a large proportion of credit derivative contracts is now recorded in a central data base, the Trade Information Warehouse. This simplifies and speeds up a number of operational processes and enables market participants to conduct more effective risk management. Moreover, various efforts are underway to settle OTC derivative transactions increasingly through central counterparties. This promotes market transparency as well as helping to reduce the complexity of the financial system, since each market participant has only one relationship with the central counterparty instead of many bilateral relationships with all trading partners.

The fact that central counterparties reduce the complexity of the financial system also has ramifications for the broader international financial regulatory reform agenda. One of the most important problems that will need to be addressed in the years ahead will be the fact that there are financial institutions that have turned out as being either ‘too big to fail’ or ‘too interconnected to fail’. Solving this problem will require a more long-term strategy aimed at finding ways of liquidating such institutions in an orderly way in the event of a crisis. We regard a market infrastructure that reduces the interconnections between the individual financial institutions as an important element in this strategy.

Unfortunately, central counterparties are no panacea either. If they are really to make the desired contribution to a stable and efficient financial system, at least three questions need to be addressed. First, in which markets do central counterparties really make sense? Second, how many central counterparties are needed? Third, how can we ensure that the central counterparties will not, in themselves, create new risks for the financial system?

Allow me to add a few remarks on this subject. First of all, it is obvious that central counterparties make sense above all in markets that have attained a certain trading volume and where there are significant counterparty risks. In other words, the aim is not to settle all financial market business through central counterparties. This would presumably undermine helpful innovation of new financial instruments.

In the case of the OTC derivatives market, which crossed the critical threshold some years ago, we note that rather than just one there are now several central counterparties offering their services. It is difficult to judge what form the optimal market structure should take. On the one hand, economies of scale would clearly favour one central counterparty. On the other hand, it could make sense from a dynamic point of view to have several central counterparties in competition with one another, since this would create stronger incentives for them to adjust their services more quickly to the changing needs of market participants.

Independent of whether central counterparties act as monopolists or oligopolists, we must be conscious of the fact that, as they gain in importance, they will themselves become potential single points of failure for the financial system. If central counterparties are really going to contribute to a more stable financial system they must be equipped with sufficient financial resources to enable them to cushion failures by their participants – even the biggest participants. Consequently, the risk management models of the central counterparties must be tested rigorously by market participants and by the appropriate regulators.

4. Regulation? Self-regulation?

In concluding my remarks today, I would like to reaffirm the importance of financial market infrastructures as the bedrock of the financial system. If these infrastructures are well designed, they can help to ensure that the financial system is both efficient and able to promote financial stability. The individuals responsible for ensuring that payment and settlement systems work smoothly at all times and meet the requirements of the financial industry are, in the first instance, the operators as well as market participants.

The task falling to regulatory authorities is to establish certain guidelines, especially for infrastructures that are of critical importance for the stability of the financial system. Thus, in past years, the central banks and supervisory authorities of various countries have worked together to draw up international standards that will help ensure that financial market infrastructures are safe and efficient.³ Naturally, in the light of the financial market crisis it will be necessary to conduct a careful review to see whether these standards are still appropriate, or whether they require modification. It is important that the standards are formulated as objectives, with market participants being free to decide how they can achieve them as efficiently as possible.

Moreover, the examples of the foreign exchange market and the OTC derivatives market demonstrate that, in the past, market participants have, at times, failed to build an appropriate market infrastructure. Or, to put it differently, markets are in no way always perfect. Where there is market failure, regulators will have to intervene more rapidly and more decisively than they have to date, committing market participants to develop suitable solutions without delay.

As in other areas of financial market regulation, what market infrastructures require is the right mix of personal responsibility within a market economy framework, on the one hand, and regulatory and supervisory intervention, on the other hand. If we manage to find the right balance, we can be confident that the global financial market infrastructure will remain innovative and, at the same time, a bedrock of stability.

³ Cf. CPSS (2001): Core Principles for Systemically Important Payment Systems. CPSS/IOSCO (2001): Recommendations for Securities Settlement Systems. CPSS/IOSCO (2004): Recommendations for Central Counterparties.