



EUROPEAN CENTRAL BANK

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# REPORT ON THE LESSONS LEARNED FROM THE FINANCIAL CRISIS WITH REGARD TO THE FUNCTIONING OF EUROPEAN FINANCIAL MARKET INFRASTRUCTURES

APRIL 2010

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APRIL 2010

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# CONTENTS

CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>4</b>
<b>INTRODUCTION</b>	<b>8</b>
<b>1 INFORMATION FLOW FOLLOWING A DEFAULT</b>	<b>9</b>
1.1 Practical experience during the crisis	12
1.2 Main lessons	13
<b>2 DEFAULT MANAGEMENT</b>	<b>15</b>
2.1 Practical experience during the crisis	15
2.1.1 Risk controls in the pre-default period	16
2.1.2 Default management procedures	17
2.1.3 Liquidation of collateral	20
2.1.4 Adequacy of stress tests	21
2.2 Main lessons	22
<b>3 BEHAVIOURAL FACTORS</b>	<b>26</b>
<b>4 ISSUES RELATING TO OTC MARKETS</b>	<b>27</b>
4.1 Practical experience during the crisis	27
4.2 Main lessons	27
<b>CONCLUSION</b>	<b>28</b>



## EXECUTIVE SUMMARY

This report considers issues relating to the impact of the financial crisis on the functioning of European financial market infrastructures (FMIs), including systemically important payment systems, central counterparties, and securities settlement systems. It reflects the outcome of bilateral interviews conducted by the Eurosystem<sup>1</sup> central banks, the Bank of England and Sveriges Riksbank with a representative sample of FMIs and financial institutions participating in these FMIs.

During the financial crisis, FMIs in general functioned well and proved to be essential to support the liquidity and stability of financial markets, especially in the aftermath of Lehman Brothers' default. The latter was an unprecedented event in recent times owing to its geographical coverage and the broad range of financial markets affected. Its management required close cross-border (intra-European Union (EU) and EU-third country) interaction between the various parties involved, including FMIs, their participants, overseers and securities regulators.

The risk management framework established by European FMIs in compliance with oversight requirements contributed to containing the systemic impact of the default of critical counterparties during the crisis. This framework is composed of risk controls and default management procedures that, in combination with defined access and exclusion/suspension criteria, aim to limit risk exposure to the default of a critical counterparty, this being a critical participant or a service provider, e.g. settlement agent or custodian.

This report focuses on challenges that the interviewed European FMIs and participating financial institutions faced during the financial crisis with respect to: (i) the information flow following a default, (ii) the default management, (iii) the behavioural factors which adversely affected market liquidity conditions, and (iv) issues relating to over-the-counter (OTC)

markets. The information presented in this report summarises the interviewees' views and does not necessarily represent the opinion of the interviewing central banks. Furthermore, this information is not necessarily exhaustive as it cannot be excluded that non-interviewed FMIs and financial institutions faced additional challenges that were not reported.

## I INFORMATION FLOW FOLLOWING A DEFAULT

Effective management of crisis situations requires timely and clear information on the relevant default. The existing EU information-sharing framework did not always meet the expectations of FMIs and participating financial institutions, which stated that the relevant authorities did not always disseminate information on a counterparty's default in a timely and comprehensive manner. Indeed, the current framework, which is primarily based on the procedures laid down in the Settlement Finality Directive<sup>2</sup> (SFD), the Banks Winding-Up Directive<sup>3</sup>, the Market Abuse Directive<sup>4</sup> and the Capital Requirements Directive<sup>5</sup>, only addresses the information of known creditors and the sharing of information between designated competent authorities in the EU. It does not require these competent authorities to inform overseers (if different from the designated authority in the SFD), FMIs and other market participants.

1 The Eurosystem comprises the European Central Bank (ECB) and the national central banks of those countries that have adopted the euro.

2 Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems, as amended by Directive 2009/44/EC of the European Parliament and of the Council of 6 May 2009 (OJ L 166, 11.6.1998, p. 45).

3 Directive 2001/24/EC of the European Parliament and of the Council of 4 April 2001 on the reorganisation and winding up of credit institutions (OJ L 125, 5.5.2001, p. 15).

4 Directive 2003/6/EC of the European Parliament and of the Council of 28 January 2003 on insider dealing and market manipulation (market abuse) (OJ L 96, 12.4.2003, p. 16).

5 Directive 2006/48/EC of the European Parliament and of the Council of 14 June 2006 relating to the taking up and pursuit of the business of credit institutions (recast) (OJ L 177, 30.6.2006, p. 1).

In the absence of information from an official and reliable source, FMIs and participating financial institutions had to rely on publicly available information and informal contacts with other market participants and authorities. Coping with different sources of information, they were sometimes exposed to inconsistent and unclear facts, e.g. with respect to the legal entity affected by the default, the timing and the nature of the default, or its legal implications in a cross-border context. Even the notion of “default” was not univocally defined in the different jurisdictions affected.

With reference to the SFD notification regime, it was observed that central banks are not necessarily included in the list of authorities to be notified. Moreover, the information to be exchanged could be standardised further to enable automated processing and, ideally, the types of default to be communicated within the EU should be aligned. It was also noted that, as the defaulting party may be located outside the EU/European Economic Area (EEA), it is important to strengthen information exchange and cooperation between relevant authorities not only within the EU but also at a global level.

With reference to the market expectation to receive information from an official source, it was recognised that the publication of an extract of the decision on the opening of insolvency proceedings in the Official Journal of the European Union does not address the need for timely access to comprehensive information.

## 2 DEFAULT MANAGEMENT

Risk controls, including certain precautionary measures limiting exposure to a potentially defaulting counterparty, may be initiated prior to the opening of insolvency proceedings, i.e. once a participant’s solvency situation is identified as critical. However, certain measures taken individually may trigger overdue reactions from other market players and accelerate severe disruptions in the market. Sometimes the dilemma emerged that neither relevant FMIs nor the main creditors of a potentially defaulting

counterparty wanted to precipitate the default as they feared that this could seriously harm their own reputation and/or entail potential liability. At the same time, they needed to take measures to reduce the potential exposure (of the system and/or the system’s participants). Therefore, they frequently liaised with the potentially defaulting counterparty and sought guidance from banking supervisors, overseers or securities regulators. However, it may be opportune to reflect on the appropriate extent of the discretionary powers of infrastructures and/or participants concerning the activation of risk management procedures.

After the contractual default or the declaration of insolvency of a counterparty, FMIs affected by the default activated the respective default procedures, which are tailored to the national legal framework and the specifics of the infrastructure. This led to added complexity for multi-country players and, sometimes, inconsistencies between interconnected FMIs.

Ambiguity in the legal documentation or unawareness of the relevant FMIs’ operational rules, in particular among participating financial institutions, made default management procedures cumbersome to implement.

Critical difficulties encountered in this field related to: (i) the implementation of close-out rules and (ii) the lack of segregation of customer assets (including margins), which complicated the transfer of positions from the defaulting counterparty to other entities.

The widespread use of collateralisation as a counterparty risk mitigation tool allowed the losses resulting from the default to be minimised or recovered. However, the liquidation of collateral was in some cases difficult, e.g. owing to the specific insolvency procedures in certain EU Member States or to the “non-proper” functioning of money markets. In particular, uncertainties surrounding the liquidation price (especially in the absence of trades) and the financial condition of certain credit institutions had an adverse impact on the evaluation of related collateral assets,

which made the liquidation process somewhat difficult.

Moreover, central counterparties reported that their liquidity needs increased considerably, entailing a more active collateral management.

Some FMIs reported that the stress tests which they regularly conduct improved their crisis management; however, none of the tested scenarios had foreseen the size nor explored all the operational impacts of the recent financial crisis.

### 3 BEHAVIOURAL FACTORS

The financial crisis also affected market participants' behaviour with respect to their payment and securities settlement activity. In particular, the uncertainty regarding other participants' exposure to the defaulting counterparty led participants to limit their exposure to the rest of the market in general, which adversely affected market liquidity conditions. Financial institutions then tended to channel payments directly through a payment system, instead of using correspondent banks, while custodians/settlement agents generally requested their customers to pre-fund their positions in relation to securities settlements.

### 4 ISSUES RELATING TO OTC MARKETS

A securities industry association reported a lack of transparency and liquidity in OTC markets during the crisis. This resulted in a call for more standardisation of OTC products to facilitate the organised trading and clearing of these products on transparent public markets.

#### MAIN LESSONS

Based on the experience reported by the interviewees, the findings presented in this report about the overall good level of resilience of market infrastructures are reassuring. However, the report also identifies current procedures and rules that could be enhanced so that FMIs, their participants and the relevant public authorities

are better equipped to cope with similar cross-border default events in the future and ensure a smoother default management. Consequently, the following eight main lessons have been learned:

**Lesson 1:** Once the relevant authority (e.g. the home supervisor or a competent court) has declared the insolvency of a critical counterparty, this information must be dispersed to the relevant authorities and, if possible, from these authorities to FMIs and to the market in general in an accurate, unambiguous, complete, transparent and timely manner.

**Lesson 2:** Risk management frameworks of FMIs and of their participants are essential to minimise the contagion risks of a critical counterparty's potential default. Where necessary, specific aspects of such risk management frameworks should be enhanced.

**Lesson 3:** In a crisis situation, final decisions on the activation of preventive measures will be taken by the relevant FMIs and their participants. Market authorities and central banks may assist within the limit of their respective mandates. In this respect, the cooperation/coordination of market authorities and central banks is key, especially at a cross-border/global level.

**Lesson 4:** Possible inconsistencies between FMIs' default management rules should be identified. Interconnected FMIs should coordinate the implementation of their rules.

**Lesson 5:** All relevant actors in the financial markets should better familiarise themselves with the default management procedures.

**Lesson 6:** Difficulties in applying default management procedures should be evaluated.

**Lesson 7:** FMIs should enhance their liquidity resilience.

**Lesson 8:** The soundness, resilience and transparency of OTC derivatives markets should

be enhanced. In particular, the establishment of sound infrastructures for OTC derivatives should be promoted.

#### FOLLOW UP

Some follow-up work on the above lessons has already begun, partly on the initiative, or at least with the involvement, of the Eurosystem, in its role as overseer or catalyst. In particular, the Eurosystem is actively contributing to or monitoring the various work streams initiated, in close cooperation with other relevant authorities. These relate to:

- improving information sharing between authorities and, if possible, FMIs and their participants;
- enhancing the coordination/cooperation of oversight authorities at the level of the European System of Central Banks (ESCB)/EU and at the global level;
- evaluating the potential need to harmonise the default procedures of interconnected FMIs;
- reviewing existing international oversight standards for FMIs, including liquidity management standards; and
- establishing a sound infrastructure for OTC derivatives.

With respect to market initiatives, the Eurosystem welcomes the actions of market associations aimed at promoting understanding of standardised contracts and adherence to market protocols.

The Eurosystem has identified further possible follow-up actions and calls on the entities which are responsible for achieving the enhancements identified to play a leading role in this process. In most cases, FMIs (together with their participants) have the primary responsibility for such work; in other cases, the leadership or support of securities regulators, supervisory authorities and/or EU/national legislators will be necessary. The Eurosystem supports market initiatives in this direction and, in its role as overseer and catalyst, will continue to foster the necessary changes.

The proposed follow-up actions for FMIs are listed below.

- Enhancement of direct monitoring of critical counterparties' creditworthiness.
- Definition of criteria for, and identification of, their critical participants.
- Introduction of some flexibility for FMIs, where needed, when applying preventive measures in response to unforeseeable market conditions.
- Promotion of practical educational measures on default procedures.
- Enhancement of FMIs' stress-testing exercises.

Finally, EU supervisory and oversight authorities are invited to enforce further the segregation of client positions and related collateral in line with ESCB-CESR (The Committee of European Securities Regulators) Recommendation 12. EU/national legislators are called on to review insolvency procedures, where appropriate, to facilitate collateral liquidation.



## INTRODUCTION

Several initiatives have been launched at the national and international level to reflect on the lessons learned from the recent financial crisis, within which the most disruptive event was the default of Lehman Brothers in September 2008.

This report considers issues relating to the impact of the default of a critical participant or a service provider (hereinafter a “critical counterparty”) on the functioning of European financial market infrastructures (FMIs), including systemically important payment systems (SIPs), central counterparties (CCPs) and securities settlement systems (SSSs). This initiative was launched in agreement with FMIs and their participants represented in the respective ECB contact groups, namely the Contact Group on Euro Payments Strategy (COGEPS) and the Contact Group on Euro Securities Infrastructures (COGESI).

The market experience through the events of 2008 indeed provided unique evidence of the impact of defaults of critical counterparties on the functioning of European FMIs during a financial crisis and the role these play in distressed market conditions. Prior to the financial crisis, European market infrastructures had a very limited (if any) exposure to defaults of critical participants. Thus, shortly after the events of September 2008, the two ECB contact groups acknowledged the need to gain a better insight into the problems that FMIs and their participants experienced during the financial crisis and, in particular, on the default of Lehman Brothers.

In general, European FMIs did work smoothly during the financial crisis and proved to be of

critical support to the liquidity and stability of financial markets. Indeed, notwithstanding the defaults, markets always stayed open for business, clearing house mechanisms functioned, and SSSs and payment systems settled as expected. This result was achieved thanks to the risk management frameworks implemented by FMIs in compliance with the respective oversight requirements.

This report focuses on the challenges that a representative sample of European FMIs and financial institutions participating in such FMIs faced during the financial crisis, as reported in bilateral interviews conducted by the Eurosystem central banks, the Bank of England and Sveriges Riksbank.<sup>6</sup>

Although several defaults occurred during the recent financial crisis,<sup>7</sup> in this report reference is frequently made to the default of Lehman Brothers, as this was an unprecedented event in terms of its wide geographical coverage and the broad range of financial markets affected. This is further explained in Box 1.

<sup>6</sup> These interviews were conducted in the first quarter of 2009 on the basis of common questionnaires that were prepared in cooperation with the COGEPS and the COGESI. The sample of interviewees included 30 representatives of FMIs (namely eight SIPs – including TARGET2, five CCPs, 14 SSSs and three securities industry associations) and 61 representatives of participants in these infrastructures (mainly including financial institutions operating at the European or global level, as well as financial institutions operating in local markets and European and national banking associations). For TARGET2, although multiple interviews with domestic representatives were carried out, it has been counted as one single interviewee as the interviews related to the same system. For confidentiality reasons, the list of interviewees is not published.

<sup>7</sup> Besides the Lehman Brothers case, notably the defaults of the Icelandic banks and the near collapse of AIG, Bear Stearns and Fortis.

## Box 1

**THE UNPRECEDENTED FEATURES OF THE LEHMAN BROTHERS' DEFAULT**

Compared with other defaults that occurred during the financial crisis, the Lehman Brothers' default presented the following specific features.

- The Lehman Brothers' default simultaneously affected several markets in the EU and in the rest of the world in which it was operating through local branches and/or subsidiaries, or on a remote basis.
- Lehman Brothers had established manifold business relationships with local and international participants in all these markets. Indeed, for many participants in European FMIs, Lehman Brothers was often a major counterparty in foreign exchange and derivatives markets or in repo transactions. Furthermore, Lehman Brothers was the issuer of financial instruments held in participants' portfolios (for their own investment or on behalf of their clients), or acted in various capacities in structured products. In some cases, the business relationship also related to services provided as settlement agent, custodian and/or collateral provider with respect to foreign markets.
- Even when Lehman Brothers was not a direct or indirect participant in a specific system, owing to its critical role in some markets, its default had a disruptive impact on these markets' liquidity and, in turn, on the respective participants' liquidity constraints.

Moreover, the management of the Lehman Brothers' default required close interaction between the various parties involved, including infrastructures and their participants, as well as overseers and securities regulators, especially in a cross-border context.

In the following chapters, the market experience during the crisis is described and the related conclusions are drawn; where relevant, follow-up actions are also proposed. Chapter 1 considers the information flow following a default and, in particular, notification of the opening of insolvency proceedings. Chapter 2 examines the management of the default. Chapter 3 presents some behavioural factors which adversely affected market liquidity conditions. Chapter 4 reports on additional issues relating to OTC markets. Finally, the conclusion provides an overview of the lessons learned and the respective follow-up actions.

The information presented in this report regarding the practical experience during the financial crisis summarises the interviewees' views and does not necessarily represent the

opinion of the interviewing central banks. Furthermore, this information is not necessarily exhaustive as it cannot be excluded that non-interviewed FMIs and financial institutions faced additional challenges that were not reported.

**I INFORMATION FLOW FOLLOWING A DEFAULT**

FMIs, their participants and authorities have an interest in adequate information-sharing arrangements regarding the opening of insolvency proceedings against a critical counterparty, in order to allow individual participants, FMIs and the financial sector at large to take the necessary steps to limit any resulting actual and/or potential financial loss. The information to be shared should be comprehensive and correct

and should reach the relevant stakeholders in a timely manner.

An EU information-sharing framework already exists for this purpose, consisting of certain rules and agreements for default-related information sharing between relevant authorities and with the market. This framework is presented in Box 2.

The market experience during the financial crisis revealed some gaps in the current information-sharing framework that prevented the effective and timely communication of comprehensive information on the opening of insolvency proceedings against a critical counterparty to all relevant stakeholders.

## Box 2

### EU INFORMATION-SHARING FRAMEWORK

The current EU information-sharing framework consists of the following three main instruments.

#### (1) The Memorandum of Understanding between EU authorities on cross-border financial stability<sup>1</sup>

EU financial supervisory authorities, central banks and finance ministries agreed on the *Memorandum of Understanding (MoU) on cross-border financial stability* introducing common principles, procedures and practical arrangements concerning cooperation among the authorities responsible for preserving financial stability. The common practical guidelines for crisis management annexed to the MoU also envisage the sharing of information on crisis alerts regarding facts or events that may give rise to significant problems for, inter alia, financial infrastructures (see Section 2 of Annex 1 to the MoU). In particular, these establish three actions which must follow a crisis alert: crisis assessment, activation of crisis management frameworks and coordination of communication among authorities as well as with the financial group or financial infrastructure concerned (see Section 2.14 of Annex 1 to the MoU).

#### (2) EU Directives introducing information-sharing requirements

##### Directive 98/26/EC, as amended by Directive 2009/44/EC<sup>2</sup> – the revised Settlement Finality Directive (SFD)

The SFD introduced a *notification regime* defining how competent national authorities should be notified about the opening of insolvency proceedings related to the operator or a participant in a designated system and to a participant of an interconnected system or the operator of an interconnected system. The SFD has harmonised the definition of the moment of opening of insolvency proceedings in the EU for the purposes of systemically important systems as “the moment when the relevant judicial or administrative authority handed down its decision”.

The SFD requires Member States: (i) to specify the systems and their operators which are to be included in the scope of the Directive, (ii) to notify them to the European Commission (hosting

1 For further details, see the “Memorandum of Understanding on cooperation between the financial supervisory authorities, central banks and finance ministries of the European Union on cross-border financial stability” of 1 June 2008 – published on the ECB’s website on 20 June 2008; available at [www.ecb.europa.eu](http://www.ecb.europa.eu).

2 OJ L 146, 10.6.2009, p. 37.

a publicly accessible list), and (iii) to inform the European Commission of the authorities they have chosen to be notified in an insolvency situation by the appropriate judicial or administrative authority of another Member State. The authority to be notified may or may not be the central bank.

According to the SFD, when the relevant judicial or administrative authority has handed down its decision, this authority shall immediately notify that decision to the appropriate authority chosen by its Member State. The Member State shall subsequently immediately notify other Member States.

#### Directive 2001/24/EC<sup>3</sup> – Directive on the reorganisation and winding up of credit institutions (WUD)

This Directive sets down the information and publication requirements to be fulfilled in the event administrative or judicial authorities decide to implement reorganisation measures or winding-up proceedings are opened regarding credit institutions with branches in Member States other than those in which they have their head offices. Such requirements would be relevant whenever the affected credit institution is a critical counterparty of a market infrastructure.

In particular, the Directive regulates, inter alia:

- *The information to be communicated between/to competent authorities*  
The administrative or judicial authorities in the home Member State must immediately notify the competent authorities of the host Member State of the decision on any reorganisation measure or the opening of any winding-up proceedings, if possible before the adoption of such a decision or immediately after.
- *Publication of the decisions*  
The administrative or judicial authorities, the administrator or any other person authorised to do so must publish an extract of the decision on any reorganisation measure or the opening of any winding-up proceedings in the Official Journal of the European Union and in two national newspapers in each host Member State.
- *Provision of information to creditors in a winding up*  
The administrative or judicial authority of the home Member State or the liquidator shall without delay individually inform known creditors who have their domiciles, normal places of residence or head offices in other Member States. Liquidators must keep creditors regularly informed on the progress of the winding up.

#### Directive 2003/6/EC<sup>4</sup> – the Market Abuse Directive (MAD)

This Directive introduces information requirements applying to issuers of listed financial instruments. These must inform the public as soon as possible of inside information which directly concerns the said issuers. However, information disclosure can be delayed in certain exceptional circumstances, i.e. so as not to prejudice the issuer's legitimate interests, provided that such omission would not be likely to mislead the public and provided that the issuer is able to ensure the confidentiality of that information.

3 OJ L 125, 5.5.2001, p. 15.

4 OJ L 96, 12.4.2003, p. 16.



The opening of insolvency proceedings cannot be considered as an exceptional circumstance, while exceptional circumstances may materialise during the pre-default phase, e.g. in the case of emerging liquidity assistance. Indeed, Directive 2003/124/EC<sup>5</sup> implementing the Market Abuse Directive clarified that legitimate interests may in particular relate to the following non-exhaustive circumstances: “In particular, in the event that the financial viability of the issuer is in grave and imminent danger, although not within the scope of the applicable insolvency law, public disclosure of information may be delayed for a limited period where such a public disclosure would seriously jeopardise the interest of existing and potential shareholders by undermining the conclusion of specific negotiations designed to ensure the long-term financial recovery of the issuer” (Article 3(1)(a)).

#### Directive 2006/48/EC<sup>6</sup> – the Capital Requirements Directive (CRD)

Article 132(1) of this Directive states that the competent authorities shall cooperate closely with each other, providing one another with any information which is essential (as defined in the CRD), or relevant for the exercise of the other authorities’ supervisory tasks under the CRD.

### (3) Oversight requirements and recommendations for European FMIs

According to oversight requirements (e.g. the Committee on Payment and Settlement Systems (CPSS) Core Principles for SIPS) and recommendations (e.g. ESCB-CESR recommendations for SSSs and CCPs, the Eurosystem business continuity oversight expectations for SIPS), market infrastructures are expected to inform their non-defaulting participants about suspended products or participants.

For instance, according to the Eurosystem’s business continuity oversight expectations for SIPS, system operators should define procedures for both internal and external communication, which should be detailed in a crisis communication plan. The arrangements could, for example, include procedures for informing relevant stakeholders (participants, their customers, other financial services, overseers, the media, etc.) rapidly and regularly about any incident and its impact on the payment service.

5 OJ L 339, 24.12.2003, p. 70.

6 OJ L 177, 30.6.2006, p. 1.

## 1.1 PRACTICAL EXPERIENCE DURING THE CRISIS

FMIs and participating financial institutions expressed their expectation that relevant authorities inform, without delay, the FMIs under their jurisdiction about the opening of insolvency proceedings regarding a critical counterparty. However, this did not always happen, at least not in a manner perceived to be satisfactory.

In the case of Lehman Brothers, the wide cross-border nature of the default added to the complexity of the information sharing among authorities and with the market.<sup>8</sup>

8 It is worth pointing out that obtaining official notification of the default of counterparties located outside the EU (e.g. some of Lehman Brothers’ Asian entities) is even more problematic. Similar difficulties were perceived in the case of the Icelandic financial institutions, although Iceland is an EEA country and is subject to the SFD’s notification regime.



### Notification of FMIs

Although most FMIs reported that they were indeed informed by the relevant EU competent authority, in at least seven countries information was provided too late (one or several days after the default) or no information was provided at all. This occurred especially in a cross-border context, where the defaulting counterparty was not located in the jurisdiction of the FMI. This can be explained by the fact that existing EU regulatory provisions (e.g. the SFD) do not expressly require competent authorities to inform local FMIs – although the MoU on cross-border financial stability requires information to be disseminated to “the other relevant parties” which might include local FMIs (Section 2.13 of Annex 1 to the MoU). Provisions to this effect have nevertheless been introduced by some Member States in their respective national laws implementing the SFD.

The lack of direct and immediate official information from authorities about the opening of insolvency proceedings did not generally result in major problems for FMIs. This was mainly attributable to two factors. First, in most cases, the default did not concern a critical counterparty of the respective infrastructure. Second, in line with relevant oversight requirements, FMIs monitored general market developments and their counterparties directly; once FMIs had identified the potential default as critical, they established a direct information exchange with the respective counterparty and/or its settlement institution to obtain confirmation of the actual default.

However, especially in the absence of official information, some FMIs (and some participating financial institutions) faced problems in evaluating the type and/or impact of the default. These problems were often related to uncertainty about the legal entities concerned, the exact timing and the nature of the default, as well as the legal implications in a cross-border context. In this respect, it was often criticised that insolvency legislation, even within the EU, is not fully harmonised. For instance, the notion

of “default” was not univocally defined in the different jurisdictions affected.

### Notification of participating financial institutions

When FMIs identified a default, they issued default notifications to their participants – as provided in their rules – via diverse channels, e.g. partially standardised SWIFT messages, e-mails, or information notes on protected websites. It should be noted that FMIs did not standardise the notification content; thus, participants in different FMIs did not receive the same level of detail on the actual default.

Besides information provided by FMIs, participating financial institutions received default information from other sources (e.g. the International Swaps and Derivatives Association, ISDA), but with some delay. Participants with headquarters and/or branches/subsidiaries in the country of the defaulting counterparty seemed to have experienced a comparative advantage regarding the timeliness and the quality of the information, since they could also rely on their own market observations. The fact that the information had to be retrieved from various sources added to the complexity of the situation.

## 1.2 MAIN LESSONS

**Lesson 1: Once the relevant authority (e.g. the home supervisor or a competent court) has declared the insolvency of a critical counterparty, this information must be dispersed to the relevant authorities and, if possible, from these authorities to FMIs and to the market in general in an accurate, unambiguous, complete, transparent and timely manner.**

The existing information-sharing framework as outlined in Box 2 did not always meet the expectations of FMIs and participating financial institutions. Appropriate measures to close existing gaps in the current information-sharing framework should be promoted.

In particular, with reference to information sharing between authorities, the following three problems were identified with regard to the current SFD notification regime.

- First, central banks are not expressly included in the SFD list of authorities to be informed, although Member States may decide which authorities are considered competent authorities for the purposes of the SFD communication procedures. In practice, at a national level, they are likely to be notified through formal (or informal) crisis management committees pooling together the relevant national authorities, including the national central bank. Furthermore, it is observed that, as the SFD provides that insolvencies are only to be notified to the authorities chosen by Member States, the ECB, being an EU institution, is excluded from any notification process. This is unfortunate, in particular given that the ECB has primary oversight responsibilities for certain SIPs (namely TARGET2, EURO1, STEP1, STEP2 and CLS for the settlement of the euro).<sup>9</sup>
- Second, the notification procedures are neither automated nor standardised. It would be beneficial to introduce automatic procedures and standardise them to the extent possible.<sup>10</sup> In particular, procedures, messages and tools should be clearly defined and regularly tested in order to keep them up to date and avoid problems in emergency cases. It should be noted that similar requirements are already in place for FMIs as regards notification of their participants.
- Third, several survey participants complained that the types of default covered by the notification regime are not aligned within the EU.<sup>11</sup>

Concerning the latter two points, it is noted that where credit institutions with establishments in more than one Member State are concerned, the WUD has harmonised the definitions of reorganisation and winding up and has created a

regime for information sharing between home-host authorities.

With regard to information sharing with the market, many respondents requested that information on defaults be provided centrally and via easily accessible public sources, as well as on a cross-border basis. In this respect, it is noted that the publication requirement introduced by the WUD (according to which information regarding the opening of insolvency proceedings relating to credit institutions with branches set up in Member States other than those in which they have their head offices is to be published in the Official Journal of the European Union), does not adequately address the needs of FMIs and their participants, for the following three reasons at least.

- First, administrators of the defaulting counterparty are only required to publish an extract from the competent authority's decision, which might not be sufficient to evaluate the nature and the impact of the default.
- Second, the Publications Office of the European Union is only required to publish such an extract within twelve days of its dispatch.<sup>12</sup>
- Third, the requirement of publication in the Official Journal does not apply to the default of credit institutions headquartered outside the EU and participating in EU infrastructures on a remote basis.

<sup>9</sup> As already pointed out in the ECB's Opinion of 7 August 2008 on a proposal for a directive amending Directive 98/26/EC and Directive 2002/47/EC (CON/2008/37) (2008/C 216/01).

<sup>10</sup> For instance, templates could be used, including a checklist of indispensable information (legal entity concerned, type of insolvency proceedings opened, authority having taken the decision, date of the decision, etc.).

<sup>11</sup> The alignment of relevant insolvency legislation would appear to be difficult to achieve in the foreseeable future at the EU level and even more difficult at the global level. The Financial Stability Board and the G20 advocate a certain degree of harmonisation of reorganisation measures regarding banking crises. The Basel Cross-border Bank Resolution Group has also made recommendations pointing in that direction.

<sup>12</sup> WUD, Title II, Article 6(3).

Furthermore, the publication requirement introduced by the WUD only applies to credit institutions.

#### Follow-up action

- *Improvement of information sharing between authorities and, if possible, FMIs and their participants.*

Existing notification procedures should be reviewed in order to close existing gaps in the information-sharing framework as well as to strengthen the timeliness and the reliability of the overall SFD notification regime.

Where relevant, the exchange of information with FMIs and their participants should be improved, taking into account the achievements and weaknesses of the WUD. In particular, from a practical perspective, it needs to be clarified which authority would inform the relevant FMIs, at what point in time and using which mechanism; what (minimum) information would the notification contain and who would take the legal responsibility, if any, for the accuracy of the information provided.

The gaps (such as the omission of the ECB) and ambiguities need to be thoroughly analysed (the authorities and institutions concerned, responsibilities, timely and efficient procedure, content, liabilities, etc.) by the European Commission and other authorities involved in the notification procedures. Notification procedures and tools should be revised where necessary and regularly tested. If possible, the exchange of information between authorities, as well as the notification of FMIs, should be automated, harmonised and standardised. This should also include the categorisation of types of default covered by the notification procedures. In respect of the above aspects, EU legislative action could be considered.

## 2 DEFAULT MANAGEMENT

In compliance with oversight requirements,<sup>13</sup> European FMIs have established their own risk management framework aimed at limiting the risk exposure to the default of a critical counterparty, i.e. a critical participant or a service provider, e.g. settlement agent or custodian. This framework is composed of risk controls and default management procedures, complemented by defined access and exclusion/suspension criteria.

Similarly, in compliance with supervision requirements, financial institutions have internal risk management rules for managing their business relationships and, in particular, the financial exposure incurred in the context of their payments and securities custody, clearing and settlement activity.

### 2.1 PRACTICAL EXPERIENCE DURING THE CRISIS

The market experience during the financial crisis showed the importance of adequate risk controls implemented by FMIs and participating financial institutions. It also highlighted certain aspects requiring further improvement, such as coordination with the relevant authorities and authorities' cooperation/coordination at a cross-border/global level.

As regards default management procedures, the market experience uncovered inconsistencies between the rules of interconnected FMIs

<sup>13</sup> As regards SIPSs, in 2001 the Eurosystem adopted the CPSS "Core Principles for Systemically Important Payment Systems" (Core Principles) and further developed "Business continuity oversight expectations for SIPS" in 2006. As concerns securities clearing and settlement systems, the Eurosystem, together with the other ESCB central banks and in cooperation with the CESR, developed recommendations for SSSs and CCPs, based on the recommendations for SSSs and CCPs developed jointly by the CPSS and the International Organization of Securities Commissions (IOSCO).

and revealed that the level of awareness of the implementation details of relevant default management procedures was sometimes inadequate. In particular, certain difficulties in implementing specific default management procedures (e.g. in dealing with close-out rules) and liquidating collateral emerged. Moreover, the market experience also underlined the importance of the liquidity resilience of FMIs (especially CCPs) and the adequacy of stress tests undertaken by FMIs.

#### 2.1.1 RISK CONTROLS IN THE PRE-DEFAULT PERIOD

The pre-default period was characterised by a high degree of uncertainty. In this context, FMIs and participating financial institutions monitored the creditworthiness of potentially defaulting critical counterparties on a real-time basis, based on internal information derived from their settlement performance and on external information from public information sources (e.g. via relevant media) or information exchange with other market participants and/or authorities.

During the crisis, **FMIs and participating financial institutions** obtained information on potential defaults from either publicly available information sources or informal contacts with other FMIs, participants (brokers/dealers, counterparties, clients) or authorities. Some FMIs reported that they liaised directly with the potentially defaulting counterparty or the member that acted on the latter's behalf (e.g. as settlement member) in order to obtain more reliable information.

Many FMIs and participating financial institutions also monitored information provided by rating agencies. However, rating agencies were often criticised by both FMIs and participating financial institutions as they kept the rating of defaulting counterparties' creditworthiness unchanged, even up to one day before the announcement of the default.

FMIs and participating financial institutions often faced the dilemma of either undertaking

the required preventive measures to reduce their exposure to a potentially defaulting counterparty, or waiting for further developments and more conclusive information. It should be noted that, while certain preventive measures (including, inter alia, the suspension of a participant prior to its actual default or the cutting of credit lines) may have benefits from the perspective of the individual FMI or participating financial institution, the same preventive measures also present important liability considerations (for example, which party bears the liability for suspension). In addition, they may precipitate the default of the critical counterparty by fuelling reactions in the market which might not otherwise be justified. When the potentially defaulting counterparty was a major institution (e.g. in the case of Lehman Brothers), neither FMIs nor financial institutions wanted to be identified as the party who "brought the defaulting counterparty down" as they feared that this might have resulted in severe damage to their reputation and potential liability.

Although FMIs and participating financial institutions generally acted responsibly in the recent crisis, the above dilemma is nevertheless an aspect that will have to be taken into account in the handling of potential future events.

**FMIs** reportedly did undertake certain preventive measures before a default materialised. In this respect, the flexibility to take unilateral action, such as suspending a participant, laid down in FMI rules played a key role. Some FMIs reported that after the default of a parent company, they expected that the default of the respective subsidiaries was only a matter of time and, consequently, suspended these participants or at least cut their credit lines. Other FMIs, including exchanges, followed the decisions taken by other relevant FMIs, such as TARGET2 or the CCP servicing the respective market. Furthermore, some CCPs increased their intraday margining requirements in advance of the official announcement of the default in order to mitigate possible impacts on the system.

In addition, some clearing and settlement systems reported that there was a lot of pressure to abrogate their standard rules (e.g. by extending clearing deadlines<sup>14</sup> or introducing a sequential procedure whereby the potentially defaulting member or its settlement member would act prior to the remaining members) in order to reduce liquidity pressure.

Owing to the high uncertainty in this pre-default period, FMIs sought close cooperation with authorities regarding the activation of preventive measures, on questions such as: (i) whether the relationship with a potentially defaulting participant should be suspended/terminated or carried on in a limited way; and (ii) which measures could be taken in order to limit as much as possible the impact of a counterparty's potential default on all affected participants and the infrastructure as a whole.

As regards **participating financial institutions**, these generally did not close out existing contractual obligations before the default of a counterparty was declared. Nevertheless, most institutions followed a gradual process of scaling back intraday liquidity provision, including cutting their credit limits in some systems and increasing levels of collateralisation.<sup>15</sup>

Some financial institutions reported that using the following preventive measures was particularly effective: (i) introducing a more conservative approach to managing counterparties' credit risks, (ii) using infrastructures which strictly rely on delivery versus payment procedures, (iii) replacing cash collateral by securities collateral, since the latter is often better protected in the event of default<sup>16</sup>, as well as (iv) establishing special internal working groups with the specific task of monitoring the turbulences in financial markets, including the functioning of market infrastructures, and taking appropriate action when required.

Finally, **some FMIs and participating financial institutions** were of the opinion that prior to an actual default, more guidance by overseer central banks and securities regulators was

warranted. In particular, they suggested that: (i) in the case of potential default of systemically important counterparties, the relevant authorities could envisage providing step-by-step guidance already in the pre-default period (e.g. in the form of non-binding recommendations), (ii) central banks could assume a greater general leadership role in future financial crisis situations, and (iii) a crisis committee at European level could be established. Furthermore, they also suggested areas for improvement regarding crisis coordination and information dissemination, for example, they considered that: (i) initial information and regular updates on default situations should have been provided more promptly, and (ii) the details of rescue packages could be communicated to the market in order to enable FMIs and participating financial institutions to revise their exposure limits towards institutions benefiting from such packages.<sup>17</sup>

### 2.1.2 DEFAULT MANAGEMENT PROCEDURES

Default management procedures aim to minimise the disruption to an infrastructure, including its participants, caused by the default of a critical counterparty.

14 Some respondents considered that a harmonised extension of cut-off hours of payment and settlement systems would have facilitated the processing of payments and securities settlements.

15 Prior to its default, Lehman Brothers was on many financial institutions' "watch lists". Some had stopped new business or scaled down existing business with Lehman Brothers already some weeks before the default.

16 It is noted, however, that the Financial Collateral Directive protects collateral both in the form of securities and cash. Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements (OJ L 168, 27/06/2002, p. 43).

17 As regards the request to communicate the details of rescue packages to the market, there are certain information-sharing constraints. Concerning the question of the non-disclosure of emergency liquidity assistance, the ECB, in its recently adopted Opinion on a proposal for a directive of the European Parliament and of the Council amending Directives 2003/71 (prospectus) and 2004/109/EC (transparency requirements) (CON/2010/6) (2010/C 19/01) of 11 January 2010, has indicated (point 2.2.) that: "A clear legal framework should be put in place in order to facilitate the smooth and rapid conduct of central banks' lending or other liquidity facilities, including in crisis situations, as highlighted by the recent financial crisis. In this regard, information on central banks' lending or other liquidity facilities provided to a particular credit institution, including emergency liquidity assistance, needs to be kept confidential in order to contribute to the stability of the financial system as a whole and maintain public confidence in a period of crisis".



In general, problems in implementing default management procedures were reported by financial institutions, rather than by FMIs.

After the contractual default or the declaration of insolvency of a critical counterparty, FMIs affected by the default activated their default management procedures relatively smoothly.

The interviewed payment systems reported that they were not, or at least not critically, affected by the defaults, e.g. because the defaulting counterparty was not one of their direct participants. Therefore, problems with respect to default management by payment systems were rarely reported.

The situation appeared to be more complex but still manageable for SSSs and CCPs, as these had to consider the multi-dimensional implications of a critical counterparty's default, as the defaulting counterparty could act as settlement bank, securities borrower under securities lending programmes, triparty securities service provider or user, issuer or issuer agent of securities eligible for settlement, and/or cash correspondent.

The main issues emerging from the experience reported by FMIs and participating financial institutions are described below.

#### **(i) Inconsistencies between interconnected FMIs' rules**

Each FMI has specified default procedures tailored to the respective national legal framework and their own operational framework. As a result, there is no harmonised approach in the implementation of default procedures, including as regards the legal concept used (e.g. suspension, exclusion, termination). This created certain inconsistencies between interconnected infrastructures.

For instance, in the case of TARGET2, component systems must act in compliance with the respective local insolvency law. As a consequence, two branches of the same

entity were treated differently; one branch was excluded from the system in one country while the other branch was only suspended in the other country. Although this was fully compliant with the system rules, it nevertheless confused some participants and ancillary systems.

Another example which was reported referred to a case of interconnected infrastructures, where one CCP was interconnected with more than one SSS. In this case, problems arose owing to uncertainty as to the finality of some trades: uncertainty caused by the various (non-harmonised) definitions of the moment a transfer order enters into a system, which is critical for the finality of that order.<sup>18</sup> At the time of the financial crisis each infrastructure defined the moment of entry according to its own rules, taking into account national laws and regulations.<sup>19</sup> This resulted in situations where one SSS, based on its rules and national laws, cancelled some cross-border trades. However, according to the national legislation of the CCP, these trades were still valid and had to be manually keyed in by the CCP's local agent. Such situations increased operational risk.

The issue of consistency of the operating rules of interconnected systems regarding the moment of entry of a transfer order into a system and irrevocability was addressed in 2009 in the revised SFD in order to ensure cross-system settlement and finality. The new regime is scheduled to be implemented by the end of 2010.

#### **(ii) Awareness of default management procedures**

##### **FMIs**

In general, FMIs were fairly well aware of default management procedures and well

<sup>18</sup> Article 3 of the SFD states that transfer orders shall be legally enforceable and binding on third parties, provided that transfer orders were entered into a system before the moment of opening of such insolvency proceedings.

<sup>19</sup> Article 3(3) of the SFD provides that the moment of entry of a transfer order into a system shall be defined by the rules of that system. If there are conditions laid down in the national law governing the system as to the moment of entry, the rules of that system must be in accordance with such conditions.

prepared as to how to react in the event of a default.

In a few cases, however, it emerged that FMIs were not completely aware of the rules applying in interconnected FMIs. For instance, one SSS considered that CCPs and exchanges did not have a good understanding of the mechanics of closing out OTC cash trades. Trades closed out at the CCPs had to be deleted in the SSSs by the relevant settlement members, as the SSS itself did not have the right to do it.

In other cases, when faced with the default of a participant located in another EU or non-EU jurisdiction, some FMIs sought ad hoc legal opinions on the respective legal (and operational) consequences for the infrastructures (e.g. whether a default in another jurisdiction and/or declared by authorities of another jurisdiction was also considered to be a default under the national law).

#### Participating financial institutions

Participating financial institutions were not always aware of all the legal aspects relating to default management procedures applying in a cross-border context. Thus, financial institutions sought advice from specialised law firms on the termination of pending contractual commitments and the submission of claims. They experienced delays in receiving the required information owing to the high crisis-related workload of law firms.

Moreover, some market participants were not sufficiently aware of certain practices in financial transactions, such as the re-use or re-hypothecation of collateral. In particular, these market participants were not familiar with the provisions in their collateral arrangements permitting such practices. Further, in some instances, the receiving institution did not properly re-use the collateral in accordance with the contractual rules or commingled it with the securities holdings of other entities in the same

group, which resulted in problems in identifying and realising collateral positions.

Finally, a number of participating financial institutions indicated that interacting with the insolvency administrators/liquidators was sometimes challenging, as the latter's understanding of the functioning of complex market infrastructures was limited. Thus, certain market players proposed programmes in order to present to insolvency practitioners information about the functioning of market infrastructures and the relevant markets supported by those infrastructures.

#### (iii) Difficulties in implementing default management procedures

##### FMIs

As concerns CCPs, two cases were reported where, as a result of the non-segregation of customer accounts, the carry over to new clearers was substantially delayed.

#### Participating financial institutions

Participating financial institutions commented that the implementation of default management procedures was challenging under stressed market conditions and high volatility, sometimes complicated but still manageable. A few financial institutions also reported difficulties in assessing the magnitude of default/losses and recovery value.

Some financial institutions lacked sufficient clarity on the defaulting institution's group structure, which entities were in administration, set off/netting possibilities, and how to terminate transactions with other counterparties that were closely economically linked to the defaulting party. In particular, with respect to securities lending and triparty repo transactions under the Global Master Repurchase Agreement (GMRA), complicating factors related to: (i) identifying which entity within a financial conglomerate was the counterparty for each contract as well as identifying the collateral concerned; (ii) the sheer

size of the number of cases to handle; (iii) the number of parties involved (particularly relevant in the case of triparty arrangements), and (iv) the chain of events, e.g. corporate actions on assets used as collateral for a failing repo.

Some financial institutions highlighted challenges in coordinating their internal divisions (the back office for settlements, the middle office to confirm the close-out valuation of trades in the portfolio, the risk management division, the legal department, as well as the front office having traded with the defaulting counterparty).

- *Difficulties in implementing close-out rules*

Regarding the actual implementation of default management rules, participating financial institutions reported difficulties in implementing close-out rules.

When terminating existing contracts (such as under an ISDA master agreement), some participating financial institutions faced problems even when they were in principle aware of the rules. Indeed, the rules were sometimes difficult to implement in the highly volatile market environment, depending on the contractually agreed method of close out chosen by the counterparties. For example, complying with the requirements of the ISDA 2002 master agreement to obtain market quotes was sometimes difficult. Some institutions reported complications in closing out deals, as part of the market was no longer accessible; there were no replacement/close-out prices available and it was difficult to “push” the brokers for prices. As a consequence, in some cases it took several days to close out the whole portfolio and several weeks to collect evidence of all the prices needed for the claim lists.

Financial institutions also reported difficulties in dealing with certain procedural aspects and formalities of close-out procedures, such as the delivery of official documents in person and the provision of written proof of acceptance by a defaulting entity. In particular, there were

uncertainties about whether or not a termination notice was actually required, which had resulting implications for evidence of the early termination date. Moreover, some problems were reported regarding the delivery of notifications of contract terminations to Lehman Brothers’ office in London or in New York, which was related to the ambiguity regarding which entity of the Lehman Brothers group was in fact the counterparty.

In addition, some counterparties in OTC transactions, which were not covered by a master agreement and thus lacked the contractual arrangements to deal with default, incorrectly expected SSSs to have rules in place providing guidance for the close out.

#### (iv) Liquidity resilience of FMIs

Concerning the necessity to take measures to ensure the smooth settlement of transactions<sup>20</sup>, one CCP reported that very significant liquidity was needed in order to carry over defaulting counterparties’ positions.<sup>21</sup> The resulting liquidity constraints required an active collateral management by the CCP. The CCP reported that its liquidity management was facilitated by its direct access to central bank intraday credit.<sup>22</sup> It also borrowed liquidity from commercial banks on the monetary market. Moreover, the CCP stated that, among others, the functioning of interconnected SSSs had also facilitated its liquidity management.

#### 2.1.3 LIQUIDATION OF COLLATERAL

In general, FMIs and participating financial institutions did not report any major problems in liquidating/enforcing collateral provided by the defaulting counterparty, owing to the fact

20 For example, loss-sharing arrangements or drawing on liquidity pool facilities.

21 Because of the net securities buying positions of the defaulting bank, the CCP received the securities from the seller and had to provide the cash without receiving cash from the defaulting bank as a buyer. This liquidity need related to the carry over remained until the securities on the defaulting bank’s account had been liquidated by the CCP.

22 However, it was not necessary to use central bank overnight standing facilities.

that the collateral provided often consisted of cash or high-quality assets (e.g. Eurosystem eligible collateral). Some FMIs faced over-collateralisation, which allowed them to prioritise the liquidation of assets depending on market availability. Prior to liquidation, some SSSs had to obtain information when client positions were not segregated from the defaulting participant's own positions.

The liquidation process was time sensitive since the value of collateral could drift from the value of the covered positions. Swift action was of paramount importance – especially if it could reduce exposure and potential losses (including in the case of contract termination). For instance, one participating financial institution reported that a loss was experienced when some collateral assets were liquidated owing to the sharp decrease of the respective market prices. Uncertainties surrounding the liquidation price (especially in the absence of trades) and the financial condition of certain credit institutions had an adverse impact on the evaluation of related collateral assets, which made the liquidation process somewhat difficult.

The time needed for liquidation ranged from a few hours to several days or weeks, depending on the nature of the assets. Some problems were experienced with complex structured products, which were particularly difficult to price.

Regarding the valuation of collateral, the main issues to be addressed reportedly concerned the precise starting point of the default valuation time, the different possibilities for evaluating the collateral and organising the right price feeds (to ensure use of the same fixing as the counterparty to avoid a cause for dispute).

A number of problems related to contractual documentation were also reported. In some cases, for instance, the contractual documentation was silent or impractical on several points related to the pricing of the transactions in question.

In other cases, the address of the counterparty was outdated, as the contracts were signed years ago. However, the address is of legal relevance for sending effective notification to the counterparty. Thus, respecting deadlines for notification sometimes became an issue.

Some FMIs questioned whether insolvency procedures in certain Member States might not benefit from a review in the light of the need for clearing and settlement systems and money market counterparties to determine and realise collateral without undue delay. Furthermore, they also urged the relevant EU/national authorities to develop a fact sheet on realising collateral in the different EU jurisdictions in order to help insolvency practitioners in the future, if necessary.

#### 2.1.4 ADEQUACY OF STRESS TESTS

All interviewed FMIs stated that they carried out stress tests challenging the functioning of all critical components and procedures on a regular basis.<sup>23</sup> Although FMIs aimed to test scenarios with a systemic impact, most FMIs preferred to run simulations without the involvement of participants, ancillary systems and/or third-party service providers, as this was regarded as extremely challenging and without a clear benefit for the infrastructure. Only a few FMIs reported that they had conducted tests with a wider scope, i.e. including participants, ancillary systems and/or third-party service providers.

These latter FMIs reported that it proved to be very useful during the crisis events to have conducted stress tests involving their participants. Nevertheless, none of the tested scenarios had explored all the operational or financial effects of a default the size of Lehman Brothers, as this was highly complex and difficult to simulate upfront.

<sup>23</sup> The interviews with financial institutions did not address issues relating to stress tests.

## 2.2 MAIN LESSONS

**Lesson 2: Risk management frameworks of market infrastructures and of their participants are essential to minimise the contagion risks of a critical counterparty's potential default. Where necessary, specific aspects of such risk management frameworks should be enhanced.**

FMI as well as their participants have the immediate responsibility for monitoring market developments and activating preventive measures in the pre-default period. The following actions have been identified with respect to selected risk management features which may enhance overall financial stability.

### Follow-up action

- *Enhancement of direct monitoring of critical counterparties' creditworthiness.*

Market infrastructures and their participants should rely less on rating agency assessments, but rather increase their direct monitoring of market developments in general and participants' performance in particular, in order to obtain sufficient information about a critical counterparty's creditworthiness.

In the recent crisis, rating agencies did not prove to be a satisfactory source of information upon which to assess and react to a potential default, e.g. with regard to the downgrading of a financial institution. The exclusive reliance on rating agencies is not recommended as, despite the enhancement of the respective European regulatory framework<sup>24</sup>, agencies may change the rating of a critical counterparty's creditworthiness too late.

- *Definition of criteria for, and identification of, FMI's critical participants.*

If they have not already done so, FMIs should define and identify their critical participants<sup>25</sup> and consider whether specific precautionary measures for such participants should be

introduced, so that their eventual default does not endanger the resilience of the infrastructure.

This measure has already been introduced for payment systems (in compliance with the business continuity oversight expectations for SIPS), but currently does not apply in the field of securities clearing and settlement systems. The criteria to identify critical participants might be specific to a particular market infrastructure. Further, it could be useful to analyse in more depth the concentration of critical payments in interconnected systems.

- *Introduction of some flexibility for FMIs, where needed, when applying preventive measures in response to unforeseeable market conditions.*

FMIs in general must find the right balance in their system rules between having clearly defined ex ante procedures for activating preventive measures in the case of a potential default, and maintaining enough flexibility to respond to unforeseeable market conditions that can emerge in a crisis situation. This should also be taken into consideration when these rules are assessed against the relevant oversight standards. Moreover, it may be appropriate to consider the suitable extent of the discretionary powers of infrastructures and/or participants concerning the activation of risk management procedures, in order to avoid unexpected consequences for other participants relying on the enforceability of contractual obligations.

**Lesson 3: In a crisis situation, final decisions on the activation of preventive measures will be taken by the relevant FMIs and**

<sup>24</sup> In September 2009 the European Parliament and the Council adopted Regulation (EC) No 1060/2009 on credit rating agencies (OJ L 302, 17.11.2009, p. 1). In June 2009 the Commission gave a mandate to the CESR for technical advice on the equivalence between certain third country legal and supervisory frameworks and the EU regulatory regime for credit rating agencies. For further details, see the Internal Market section of the Europa website at [www.ec.europa.eu](http://www.ec.europa.eu).

<sup>25</sup> Critical participants are those participants whose default could cause a significant problem for the functioning of a market infrastructure.



**their participants. Market authorities and central banks may assist within the limit of their respective mandates. In this respect, the cooperation/coordination of market authorities and central banks is key, especially at a cross-border/global level.**

With regard to the expectation of FMIs and participating financial institutions that market authorities and central banks provide actual guidance on the management of a critical counterparty's potential default, it should be emphasised that central banks played a very supportive role in the recent crisis. In particular, in their capacity as overseers, central banks assisted FMIs in cooperation with other relevant market authorities.

Concerning financial institutions, it is noted that these should seek assistance primarily from two sources: (i) the FMIs in which the institutions participate, and (ii) the relevant banking supervisors<sup>26</sup> in cooperation with national and cross-border crisis management teams.

Regarding the suggestion that central banks take a leading role in managing financial crises, it should be acknowledged that the Eurosystem can only act within the framework of the Treaty on the Functioning of the European Union (formerly the Treaty establishing the European Community) and the ESCB/ECB Statute.<sup>27</sup> It should also be noted that central banks are usually represented in national crisis management committees, but they may not always take a leading role.

#### Follow-up action

- *Enhancement of the coordination/cooperation of oversight authorities, at ESCB/European level and at global level.*

It would be useful to harmonise the preparatory steps to be taken by overseers in the pre-default period (e.g. upon receipt of a crisis alert). This would ensure that central banks are better prepared should a crisis situation escalate in the future. In particular, when the defaulting

counterparty is located or headquartered outside the EU/EEA, it is important to strengthen crisis information exchange and cooperation at a global level and to improve the coordination of decisions of national authorities in all jurisdictions concerned.

The Eurosystem, in close cooperation with other relevant authorities, has already initiated a work stream focused on the role of overseers in the pre-default period, including the harmonisation of crisis communication procedures.

**Lesson 4: Possible inconsistencies between FMIs' default management rules should be identified. Interconnected FMIs should coordinate the implementation of their rules.**

FMIs should address the problems experienced when implementing their own rules and procedures resulting from a lack of coordination with other interconnected FMIs in order to avoid being exposed to similar problems in the future. It should be noted that the latest amendments to the SFD require that rules on entry of a transfer order and irrevocability must be aligned in interconnected systems. Where possible, interconnected FMIs should review their rules, identify shortcomings and remedy them ideally before the SFD amendments are transposed into national law.

Moreover, when deviation from the standard rules is considered to be in the interest of the market as a whole (see also Lesson 2 and the respective third follow-up action), the potential implications for interconnected FMIs should be assessed before a final decision is taken. Any resulting implementation measures should be coordinated with the affected FMIs. For instance, if measures such as extending cut-off times are decided, they should be

<sup>26</sup> Depending on the national arrangements, the main responsibility for banking supervision may not always lie with the national central bank.

<sup>27</sup> For instance, the provision of state aid and guarantees will be determined by the authorities providing the respective funds and guarantees (i.e. national governments and parliaments), subject to EU law, in particular competition law principles.

implemented in a coordinated manner across interconnected FMIs.

#### Follow-up action

- *Evaluation of the potential need to harmonise the default procedures of interconnected FMIs.*

The experience with the crisis highlighted the potential need to harmonise the default procedures of interconnected securities FMIs. This work could be complemented by an analysis, carried out by FMIs and/or the relevant overseers, of the potential scope for harmonising close out, termination and netting rules and by an investigation into whether all FMIs dealing with securities transactions are required to define close-out procedures.

#### Lesson 5: All relevant actors in the financial markets should better familiarise themselves with the default management procedures.

FMIs and their participants should maintain a high level of awareness of their default management procedures. In this respect, educational measures addressed to all relevant actors should be promoted, as well as practical information measures for insolvency practitioners on the functioning of market infrastructures. Furthermore, FMIs should conduct regular (at least annual) default management stress-testing exercises with the involvement of participants and other relevant public authorities.

#### Follow-up action

- *Promotion of practical educational measures on default procedures.*

As regards practical educational measures, some local market initiatives for insolvency practitioners (e.g. seminars) have been launched. This notwithstanding, coordinated action at the EU level should be envisaged, including measures to ensure a high level of awareness and the smooth functioning of crisis management procedures.

Legal assessments of the implications of a default in another EU jurisdiction should be carried out or obtained by FMIs and their participants. This has already been done in some cases, for example, legal opinions sought on standard master agreements.

Moreover, concerning some practices in financial transactions, such as the re-use or re-hypothecation of collateral, market participants should be encouraged to study the existing contractual documentation further. Market participants should be aware of the possible re-use of collateral provided to another entity and of the steps required to claim back collateral from a defaulting entity.

- *Promotion of understanding of standardised contracts and adherence to market protocols.*

Concerning OTC derivatives, financial institutions should be encouraged to use the latest versions of standard master agreements and protocols, as long as they are considered to be an improvement on previous versions. All relevant actors should be fully acquainted with the content of the contracts and the valuation procedures.

As regards documentation issues, the markets have been very active in terms of the enhanced standardisation of documentation and products, portfolio compression and reconciliation, resolution of auction-based settlement and restructuring clauses in credit derivatives documentation. Relevant industry associations have discussed and introduced changes to their respective standard market documentation. In addition, specific seminars on standard market documentation have been held. However, to the extent that these changes require the replacement of old versions of master agreements with newer versions or the adherence to protocols, more progress needs to be made by market participants and should be further encouraged. Moreover, there is room for further convergence between key default provisions in existing standard master agreements, e.g. regarding valuation and

enforcement procedures, which should be actively promoted in cooperation with the respective sponsors of market documentation.<sup>28</sup>

- *Enhancement of FMIs' stress-testing exercises.*

Market infrastructures' stress tests should adequately reflect the complexity of multiple activities and be adapted to the far-reaching consequences of the default of a critical counterparty in a global context.<sup>29</sup> In the future, more tests for interconnected infrastructures and their participants should be considered. These should also involve coordinating activities between FMIs and the relevant public authorities.

From an operational perspective the following (non-comprehensive) extreme scenarios should be taken into consideration when simulating crisis situations in the future:

- the need to technically "freeze" activities of the system on a temporary basis while enabling manual intervention where needed;
- the need to migrate a service provided by a defaulting participant (e.g. settlement service provision) to another participant;
- the removal of failed trades/transactions from the system;
- the need for participants to correctly execute certain procedures e.g. default, close out and loss allocation.

Furthermore, FMIs should bear in mind that in a crisis uncertainty surrounding market developments influences the behaviour of market participants. For instance, once a default materialises, uncertainty about the dimension of all the possible impacts might lead to a situation where participants limit their exposure also to the rest of the market (and thus adversely affect market liquidity conditions). Moreover, interpretations of system rules could become more opportunistic, e.g. participants may send all payments as late

as possible or some agents might stop providing certain services altogether. Such behavioural factors should be reflected in stress-testing exercises and in the respective test scenarios.

Finally, it could be considered to conduct multi-currency stress tests and to test the effect of a CCP failure on interconnected systems.

#### **Lesson 6: Difficulties in applying default management procedures should be evaluated.**

Regarding the legal enforcement problems faced by financial institutions, use of the latest versions of master agreements, as well as adherence to recent protocols should be encouraged, in order to avoid problems concerning the appropriateness of the exposure valuation and enforcement procedures. In addition, market initiatives (such as those taken by the EFMLG) aimed at fostering the further convergence and standardisation of key provisions in standard master agreements should be supported to minimise the basis risk resulting from the back-to-back use of different types or versions of master agreements. These initiatives would also address the problems experienced in relation to identifying and realising collateral.

#### **Follow-up action**

- *Enforcement of the segregation requirement concerning client positions and related collateral in line with ESCB-CESR Recommendation 12.*

The systematic segregation of client positions and assets may improve client protection in the case of default of a custodian and reduce the risk of a commingling of assets. Competent overseers should re-evaluate the functioning of the current

<sup>28</sup> It is noted that certain groups such as the European Financial Markets Lawyers Group (EFMLG) actively promote such developments.

<sup>29</sup> The experience during the financial crisis proved that the default of a critical counterparty can result in a situation where financial institutions and FMIs are required to act simultaneously in multiple markets or take measures involving many business areas (including the handling of operational problems).

industry model where applicable and discuss whether regulatory action should be taken.

The relevant supervisory and oversight authorities could consider enforcing further the segregation of client positions and related collateral, taking into account national legal constraints, in line with ESCB-CESR Recommendation 12 on the protection of customers' securities.

- *Review of insolvency procedures to facilitate collateral liquidation.*

Insolvency procedures should reflect the need for market infrastructures and money market counterparties to determine and realise collateral without undue delay, possibly requiring a review or more transparency in certain jurisdictions. In this respect, national legislators should carry out further assessments, possibly under the leadership of the European Commission. Moreover, the Commission could develop a fact sheet on procedures for realising collateral in the different EU jurisdictions in order to assist insolvency practitioners should they intervene in the future.

#### **Lesson 7: FMIs should enhance their liquidity resilience.**

The crisis highlighted the potential for market infrastructures, especially CCPs, to face significant liquidity needs related to the carry over of defaulting participants' positions, in which context access to liquidity is essential.

#### **Follow-up action**

- *Review of existing international oversight standards for FMIs, including liquidity management standards.*

On 2 February 2010 the CPSS and IOSCO launched a comprehensive review of their existing standards for FMIs, including the 2001 Core principles for SIPs, the 2001/2 Recommendations for SSSs and the 2004 Recommendations for CCPs.<sup>30</sup> The review will reflect both on the lessons to be learned from

the crisis and on the experience gained from operation of these infrastructures under normal conditions in recent years. One area of focus will be liquidity risk. The CPSS and IOSCO aim to issue a draft of all the revised standards for public consultation by early 2011.

### **3 BEHAVIOURAL FACTORS**

Uncertainty about the dimension of the crisis, owing to asymmetric or limited access to information on other participants' exposure to the defaulting party, led participants to limit their exposure to the rest of the market as well.

On the default of a critical counterparty, the immediate reaction of participating financial institutions was to value all open positions or pending transactions (covering derivatives, repo, money market and forex transactions, etc.) via their internal monitoring systems. In the event of major concerns, the counterparty's credit lines were cut or suspended, although paying attention to the reciprocity of payments. Consequently, these participating financial institutions progressively adopted a more conservative approach to liquidity management by delaying payments, splitting payments into smaller amounts, freezing liquidity in accounts with central banks and, in some cases, stopping servicing specific products. Some opportunistic behaviour was also reported.<sup>31</sup>

With regard to correspondent banking, financial institutions analysed each individual payment with a potentially defaulting counterparty, while credit lines were reduced and pre-funding became a requirement. In the

<sup>30</sup> See the press release of 2 February 2010 entitled "Standards for payment, clearing and settlement systems: review by CPSS-IOSCO", available on the BIS website at [www.bis.org](http://www.bis.org).

<sup>31</sup> For instance, a CCP reported that on the Friday prior to Lehman Brothers' default, a participant submitted old OTC swap deals. Lehman Brothers matched them and tried to clear through the system. However, the system was designed in such a way that any "old" trades submitted, e.g. where pricing moves significantly away from par, had to be checked manually. The system decided to reject the trades. If the system had accepted those trades, it would have been unable to make a margin call on Lehman Brothers in time to cover the new exposure.

absence of pre-funding of outgoing payments or reliable information on the funding, the respective transactions were delayed. Financial institutions then tended to channel payments directly through a payment system instead of using correspondents, i.e. they moved away from the use of (potentially risky) correspondents to risk free real-time gross settlement (RTGS) payment systems (including CLS for forex transactions).

Concerning securities settlement, the financial crisis brought about changes in settlement methods at many sub-custodians/settlement agents, as settlement was only possible with pre-funding (i.e. cash had to be effectively on the account before securities settlement took place). Furthermore, some settlement agents stopped providing the service for specific securities or currencies (e.g. the Icelandic krona).

Such behavioural factors might be minimised by those measures aiming to improve the information dissemination framework (see Section 1.2), including the provision of credible information by relevant and reliable sources, as these would reduce the uncertainty emerging in a crisis. Other measures aiming to re-establish general confidence in the market to be taken by the relevant crisis management teams go beyond the sphere of FMIs and are not addressed in this report.

## 4 ISSUES RELATING TO OTC MARKETS

### 4.1 PRACTICAL EXPERIENCE DURING THE CRISIS

A securities industry association referred to the lack of transparency and liquidity in OTC markets during the crisis and called for more standardisation of OTC products in order to facilitate the organised trading and clearing of these products on transparent public markets. In particular, it advocated the introduction of rules to encourage intermediaries to opt out of OTC markets and to choose public markets with higher liquidity, based on organised transparency, neutrality,

independence, surveillance and counterparty risk management.

### 4.2 MAIN LESSONS

**Lesson 8: The soundness, resilience and transparency of OTC derivatives markets should be enhanced. In particular, the establishment of sound infrastructures for OTC derivatives should be promoted.**

The financial crisis encouraged securities regulators and overseers to consider adopting consistent regulatory and oversight measures to promote safety, resilience and transparency of OTC derivatives markets and to support private sector initiatives in this field. In line with the respective G20 mandate, regulatory initiatives regarding OTC derivatives markets are currently under consideration across jurisdictions. One area of focus is the establishment of market infrastructures for the trading, clearing and settlement of OTC derivatives, as the financial crisis highlighted severe shortcomings in the bilateral organisation of these processes.

#### Follow-up action

- *Establishment of a sound infrastructure for OTC derivatives.*

An immediate priority is to progress towards an enhanced use of CCPs for OTC derivatives eligible for central clearing. In addition, measures are being considered to strengthen risk management for contracts not eligible for central clearing, as well as to promote reporting of OTC derivatives contracts to trade repositories (TRs).

In the EU, the European Commission issued a Communication on future actions to improve the resilience of OTC derivatives markets in October 2009.<sup>32</sup> Legislative proposals are expected to be delivered by mid-2010. As part of the legislative package envisaged, the Commission intends to develop comprehensive

<sup>32</sup> See COM(2009)563/4, available on the Europa website at [www.ec.europa.eu](http://www.ec.europa.eu).

EU legal frameworks for CCPs and trade repositories to ensure the safe and efficient functioning of these infrastructures and to limit the potential for possible regulatory arbitrage across jurisdictions. Such legislation is expected to build on the recently finalised ESCB-CESR Recommendations for CCPs in the EU, which consider the specific risks inherent in the clearing of OTC derivatives. Regulatory reform along similar lines is being considered in the United States, where possible measures were outlined in May 2009. Given the global nature of OTC derivatives markets, global convergence of the regulatory measures adopted in the various jurisdictions will be essential. This work is supported by the review of the CPSS and IOSCO of the application of the 2004 CPSS-IOSCO Recommendations for CCPs to clearing arrangements for OTC derivatives, launched in June 2009.

With the impetus and support of regulators, several private sector initiatives to enhance the functioning of OTC derivatives markets are also underway. These involve the effective implementation of CCPs and trade repositories for OTC derivatives, enhanced standardisation of the legal and economic terms of OTC derivatives contracts, portfolio compression and reconciliation, the resolution of settlement and restructuring issues related to credit events, and operational improvements in the field of electronic trading and trade matching/confirmation.

## CONCLUSION

The experience reported by the interviewed FMIs and participating financial institutions provides reassurance about the overall good level of resilience of market infrastructures. At the same time, it has highlighted current procedures and rules that could be enhanced so that FMIs, their participants and the relevant authorities are better equipped to cope with similar events in the future and ensure a smoother default management.

The main lessons learned in this report concern those challenges that emerged from the reported experience during the financial crisis, especially in the aftermath of Lehman Brothers' default. An overview of these main lessons and the proposed follow-up actions is provided in the table below.

Certain follow-up actions have already been taken, partly on the initiative or at least with the involvement of the Eurosystem, in its role as overseer or catalyst. In particular, the Eurosystem is actively contributing to or monitoring the various work streams initiated, in close cooperation with other relevant competent authorities.

With reference to the follow-up actions still to be initiated, the Eurosystem calls on the entities responsible for achieving the enhancements identified in this report to play a leading role in this process. In most cases, market infrastructures and their participants have the primary responsibility for such work; in other cases, the leadership or support of securities regulators, supervisory authorities and/or EU/national legislators will be necessary. The Eurosystem supports the markets' efforts in this direction and, in its role as overseer and catalyst, will continue to foster the necessary changes.



Overview of main lessons and respective follow-up actions		
Lessons and follow-up actions	Leading entity/ies	Status
<p><b>Lesson 1: Once the relevant authority (e.g. the home supervisor or a competent court) has declared the insolvency of a critical counterparty, this information must be dispersed to the relevant authorities and, if possible, from these authorities to FMIs and to the market in general in an accurate, unambiguous, complete, transparent and timely manner.</b></p> <p>Improvement of information sharing between authorities and, if possible, FMIs and their participants.</p>	European Commission	Initiated
<p><b>Lesson 2: Risk management frameworks of FMIs and of their participants are essential to minimise the contagion risks of a critical counterparty's potential default. Where necessary, specific aspects of such risk management frameworks should be enhanced.</b></p> <p>Enhancement of direct monitoring of critical counterparties' creditworthiness.</p> <p>Definition of criteria for, and identification of, FMIs' critical participants.</p> <p>Introduction of some flexibility for FMIs, where needed, when applying certain preventive measures in response to unforeseeable market conditions.</p>	<p>FMI</p> <p>FMI</p> <p>FMI</p>	<p>To be initiated</p> <p>To be initiated</p> <p>To be initiated</p>
<p><b>Lesson 3: In a crisis situation, final decisions on the activation of preventive measures will be taken by the relevant FMIs and their participants. Market authorities and central banks may assist within the limit of their respective mandates. In this respect, the cooperation/coordination of market authorities and central banks is key, especially at a cross-border/global level.</b></p> <p>Enhancement of the coordination/cooperation of oversight authorities, at ESCB/European level and at global level.</p>	Eurosystem and other authorities	Initiated
<p><b>Lesson 4: Possible inconsistencies between FMIs' default management rules should be identified. Interconnected FMIs should coordinate the implementation of their rules.</b></p> <p>Evaluation of the potential need to harmonise the default procedures of interconnected FMIs.</p>	FMI and overseers	Initiated
<p><b>Lesson 5: All relevant actors in the financial markets should better familiarise themselves with the default management procedures.</b></p> <p>Promotion of practical educational measures on default procedures.</p> <p>Promotion of understanding of standardised contracts and adherence to market protocols.</p> <p>Enhancement of FMIs' stress-testing exercises.</p>	<p>FMI</p> <p>Market associations</p> <p>FMI</p>	<p>To be initiated</p> <p>Initiated</p> <p>To be initiated</p>

Overview of main lessons and respective follow-up actions (cont'd)

Lessons and follow-up actions	Leading entity/ies	Status
<b>Lesson 6: Difficulties in applying default management procedures should be evaluated.</b>		
Enforcement of the segregation requirement concerning client positions and related collateral in line with ESCB-CESR Recommendation 12.	Supervisory and oversight authorities	To be initiated
Review of insolvency procedures to facilitate collateral liquidation.	EU/national legislators	To be initiated
<b>Lesson 7: FMIs should enhance their liquidity resilience.</b>		
Review of existing international oversight standards for FMIs, including liquidity management standards.	CPSS-IOSCO	Initiated
<b>Lesson 8: The soundness, resilience and transparency of OTC derivatives markets should be enhanced. In particular, the establishment of sound infrastructures for OTC derivatives should be supported.</b>		
Establishment of a sound infrastructure for OTC derivatives.	European Commission	Initiated

