

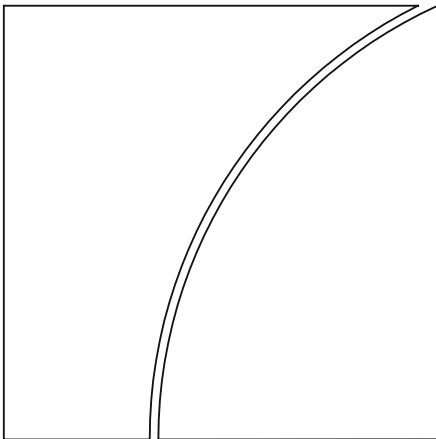
# The Joint Forum

## Consultative document

### Developments in credit risk management across sectors: current practices and recommendations

Issued for comment by 4 March 2015

February 2015



**BANK FOR INTERNATIONAL SETTLEMENTS**

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# The Joint Forum

BASEL COMMITTEE ON BANKING SUPERVISION (BCBS)  
INTERNATIONAL ORGANIZATION OF SECURITIES COMMISSIONS (IOSCO)  
INTERNATIONAL ASSOCIATION OF INSURANCE SUPERVISORS (IAIS)  
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Developments in credit risk management  
across sectors: current practices and  
recommendations

February 2015



The Joint Forum was established in 1996 under the aegis of the Basel Committee on Banking Supervision (BCBS), the International Organization of Securities Commissions (IOSCO) and the International Association of Insurance Supervisors (IAIS) to deal with issues common to/across the banking, securities and insurance sectors, including the regulation of financial conglomerates. The Joint Forum comprises an equal number of senior bank, insurance and securities supervisors representing each supervisory constituency. The Basel Committee Secretariat supports the work of the Joint Forum, which is chaired by Thomas Schmitz-Lippert, Executive Director, Federal Financial Supervisory Authority, Germany. Previous publications can be reached at the Joint Forum website ([www.bis.org/bcbs/jointforum.htm](http://www.bis.org/bcbs/jointforum.htm)).



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## 1. Executive summary<sup>1</sup>

In 2013 the Joint Forum undertook a survey of supervisors and firms in the banking, securities and insurance sectors globally in order to understand the current state of credit risk (CR) management given the significant market and regulatory changes since the financial crisis of 2008. Credit risk is generally defined as the risk that a counterparty will fail to perform fully its financial obligations, and can arise from multiple activities across sectors. For example, CR could arise from the risk of default on a loan or bond obligation, or from the risk of a guarantor, credit enhancement provider or derivative counterparty failing to meet its obligations.

Fifteen supervisors and 23 firms responded to the survey, representing the banking, securities and insurance sectors in Europe, North America and Asia. The surveys were not meant to be a post-mortem of the events leading up to the financial crisis, but rather a means to provide insight into the current supervisory framework around credit risk and the state of CR management at the firms, as well as implications for the supervisory and regulatory treatments of credit risk. The survey aimed to update previous Joint Forum work, most recently a 2006 paper, and used that date as the benchmark when asking about changes. The survey asked questions regarding:

- products posing challenges to CR management
- new credit risk transfer tools
- market developments and regulatory/statutory changes affecting CR management and the resulting changes in firm CR management practices
- changes in key operations, risk management, internal control and governance frameworks with respect to CR management
- changes in the use of models to aggregate credit risk
- changes in supervision of CR management
- changes in collateral risk

Based on the analysis of the responses from the supervisor and firm surveys and subsequent discussions with firms, the following themes emerged. Also detailed below are recommendations for consideration by supervisors.

1. Propelled by the experience of 2008 and by regulators, firms have improved their management of credit risk in areas such as governance and risk reporting. Risk aggregation has also become more sophisticated since the financial crisis. Regulatory requirements such as the Basel framework and stress testing have been one driver of the modelling enhancements. Firms highlighted increased reliance upon stress testing using their internal models. Against this background, some supervisors cautioned that there is a risk that some credit risk management or regulatory capital models could mask increased risk-taking.

<sup>1</sup> Certain IOSCO authorities may consider rule proposals or standards that relate to the substance of this report. These authorities provided information to IOSCO or otherwise participated in the preparation of this report, but their participation should not be viewed as an expression of a judgment by these authorities regarding their current or future regulatory proposals or of their rulemaking or standards implementation work. This report thus does not reflect a judgment by, or limit the choices of, these authorities with regard to their proposed or final versions of their rules or standards.

*Recommendation 1:* Supervisors should be cautious against over-reliance on internal models for credit risk management and regulatory capital. Where appropriate, simple measures could be evaluated in conjunction with sophisticated modelling to provide a more complete picture.

2. In the current low interest rate environment, there is a “search for yield” by some firms across sectors. This manifests itself in an increase in firms’ risk tolerance in a variety of different products such as auto lending by banks, increasingly risky assets in the investment portfolio for life insurers, and the syndicated leveraged loan market. Lower-quality assets with lower-rated counterparties could generate more credit risk.

*Recommendation 2:* With the current low interest rate environment possibly generating a “search for yield” through a variety of mechanisms, supervisors should be cognisant of the growth of such risk-taking behaviours and the resulting need for firms to have appropriate risk management processes.

3. Over-the-counter (OTC) derivatives, both cleared and uncleared, are a significant source of credit risk at financial institutions across sectors. As a result of both regulation and firm practices, firms are increasing the amount of initial margin they collect from trading counterparties for uncleared trades, and central counterparties (CCPs) in many jurisdictions are implementing risk management standards intended to ensure that they collect adequate financial resources from their member firms.

*Recommendation 3:* Supervisors should be aware of the growing need for high-quality liquid collateral to meet margin requirements for OTC derivatives sectors, and if any issues arise in this regard they should respond appropriately. The Parent Committees (BCBS, IAIS and IOSCO) should consider taking appropriate steps to monitor and evaluate the availability of such collateral in their future work while also considering the objective of reducing systemic risk and promoting central clearing through collateralisation of counterparty credit risk exposures that stems from non-centrally cleared OTC derivatives.

4. The increase in central clearing of OTC derivatives has clear benefits by reducing risk to individual counterparties, as articulated by both supervisors and firms. The consequence of this is to shift and concentrate credit risk to CCPs. Many firms have responded by increasing analysis of and reporting on CCPs.

*Recommendation 4:* Supervisors should consider whether firms are accurately capturing central counterparty exposures as part of their credit risk management.

## 2. Introduction

### 2.1 Background

In November 2001, the Joint Forum published *Risk management practices and regulatory capital – cross-sectoral comparison*.<sup>2</sup> This wide-ranging report compared approaches to risk management and capital regulation across the banking, securities and insurance sectors.<sup>3</sup> With increasing risk transfer across financial sectors, the idea underpinning the work drew on the principle that similar risks should be managed and assessed in a similar fashion, irrespective of the sector in which they are borne. Following the publication of this comparative report, the Joint Forum continued to delve further into select areas with the collaboration of a broad sample of financial groups from the three sectors. The relevance of the findings and analyses of this work prompted the Joint Forum and the Institute of International Finance (IIF) to organise a roundtable in November 2003 at the Federal Reserve Bank of New York. This was followed in May 2006 by the paper *Regulatory and market differences: issues and observations*, which reviewed the extent to which market practices were converging in the three sectors, as well as differences in risk management practices.<sup>4</sup>

Since the publication of these papers, fundamental changes have occurred in the financial markets. Most notably, the financial crisis that started in 2007–08, followed by the sovereign crisis in the euro zone, prompted fundamental changes in market behaviour and the regulatory space. In this context, the Joint Forum decided that it was appropriate to revisit these papers. The Joint Forum decided to narrow the scope of the work and focus the analyses on CR management, as it continues to be one of the most important risk functions at banking, securities and insurance firms.

#### Box 1

Credit risk is defined as the risk that a counterparty will fail to perform fully its financial obligations, and can arise from multiple activities across sectors. For example, credit risk could arise from the risk of default on a loan or bond obligation, or from the risk of a guarantor, credit enhancement provider or derivative counterparty failing to meet its obligations.

Market developments since the last Joint Forum paper in 2006 have resulted in important changes in the way that firms manage credit risk. The financial crisis of 2008 resulted in the downgrade or bankruptcy of several major market participants, impacting counterparties with exposures to those participants. In addition, regulatory changes mandating central clearing of certain OTC products increased market participants' exposures to central counterparties. In 2010, emerging fiscal difficulties in euro zone countries created credit concerns for previously highly rated counterparties, again potentially changing the way credit risk is managed across sectors.

From a cross-sectoral perspective, financial conglomerates with activity encompassing two or three sectors have the unique problem of aggregating credit risk across sectors. The Basel Committee

<sup>2</sup> See [www.bis.org/publ/joint04.pdf](http://www.bis.org/publ/joint04.pdf).

<sup>3</sup> Areas of risk covered include credit risk, market and asset liquidity risks, funding liquidity risk, interest rate risk, technical risk (insurance underwriting risk) and operational risk.

<sup>4</sup> See Joint Forum, *Regulatory and market differences: issues and observations*, [www.bis.org/publ/joint15.pdf](http://www.bis.org/publ/joint15.pdf), May 2006.

and the Joint Forum have published papers on topics related to risk aggregation.<sup>5</sup> The Joint Forum paper focused on approaches to the management of major individual risks across sectors, including credit risk, but was published in 2003. The Basel Committee paper, while completed more recently, focused only on the banking sector.

## 2.2 Purpose

The aim of this report is to provide updated information and analyses of key CR management issues discussed in the Joint Forum's 2001 and 2006 reports. In particular, four broad matters related to CR management for financial firms in the banking, securities and insurance sectors, as well as in financial conglomerates, are being addressed:

1. Regulatory changes related to credit risk developed/implemented by supervisors since 2006.
2. Credit risk issues that firms across the banking, securities and insurance sectors currently face.
3. Developments in the evaluation and management of credit risk since 2006, including the aggregation of credit risk from a cross-sectoral basis.
4. Cross-sectoral implications that can be drawn for supervisory and regulatory treatments of credit risk.

## 2.3 Survey methodology

The Joint Forum constructed two surveys, which are attached in Annex 2. The first was targeted at supervisors and was distributed to the entire Joint Forum membership. Of the 15 supervisors that responded, nine were located in Europe, four in North America and one each from Asia and Africa. The supervisors represented regulators of the banking, securities and insurance sectors.

The Joint Forum solicited firms in the jurisdictions of the supervisors to respond to the firm survey. Consideration was also given to balancing geography, sector and participation in other contemporaneous Joint Forum workstreams. The CR management workstream received responses from 23 of the nominated firms, ranging from less than \$100 million to over \$1 trillion in total assets. Of the firms that responded, 14 were located in Europe, six in North America and three in Asia. Six of the responding firms were from the insurance sector, six from the securities sector and five from banking, while another five of the firms were from the combined banking and securities sectors, and one firm was concentrated in the securities and insurance sectors.

## 3. Themes from surveys

The following significant themes resulted from an analysis of the survey responses and select follow-up discussions with firms.

<sup>5</sup> See Basel Committee on Banking Supervision, *Principles for effective risk data aggregation and risk reporting*, [www.bis.org/publ/bcbs239.pdf](http://www.bis.org/publ/bcbs239.pdf), January 2013; and Joint Forum, *Trends in risk integration and aggregation*, [www.bis.org/publ/joint07.pdf](http://www.bis.org/publ/joint07.pdf), August 2003.

1. Propelled by the experience of 2008 and by regulators, firms have improved their management of credit risk in areas such as governance and risk reporting. Risk aggregation has also become more sophisticated since the financial crisis. Regulatory requirements such as the Basel framework and stress testing have been one driver of the modelling enhancements. Firms highlighted increased reliance upon stress testing using their internal models. Against this background, some supervisors cautioned that there is a risk that some CR management or regulatory capital models could mask increased risk-taking.
2. In the current low interest rate environment, there is a “search for yield” by some firms across sectors. This manifests itself in an increase in firms’ risk tolerance in a variety of different products such as high-yield lending by banks, increasingly risky assets in the investment portfolio for life insurers and the syndicated leveraged loan market. Lower-quality assets with lower rated counterparties could generate more credit risk.
3. OTC derivatives, both cleared and uncleared, are a significant source of credit risk at financial institutions across sectors. As a result of both regulation and firm practices, firms are increasing the amount of initial margin they collect from trading counterparties for uncleared trades, and CCPs in many jurisdictions are implementing risk management standards, including implementing the Principles for Financial Market Infrastructures<sup>6</sup> established by CPMI (formerly CPSS) and IOSCO.
4. The increase in central clearing of OTC derivatives has clear benefits by reducing risk to individual counterparties, as articulated by both supervisors and firms. The consequence of this is to shift and concentrate credit risk to central counterparties (CCPs). Many firms have responded by increasing internal analysis of and reporting on CCPs.

Each theme is discussed in greater detail in the next section.

<sup>6</sup> <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD350.pdf>.

In addition to the themes noted above, other significant sources of credit risk emerging from the surveys include:

*Lending:* Across sectors, credit risk results from lending products such as traditional bank lending and direct lending by non-banks. Banking supervisors noted that, as the most traditional product in the banking sector, loans to the corporate sector are one of the largest sources of credit risk. In particular, loans to small and medium-sized enterprises often pose a great challenge in managing credit risks. Insurance supervisors also noted that loans to medium-sized companies are critical in CR management. Some risks may arise from credit protection insurance products that are linked to loans, as a consequence of the effect of the prolonged economic crisis in Europe.

*Reinsurance:* The topic of reinsurer counterparty risk has been considered by regulators in recent years in a number of jurisdictions (eg Canada, Australia and the EU). The rationale behind the fresh consideration of this risk appears not to be a direct outcome of the 2007–08 financial crisis, but rather concerns as to what might happen were reinsurers to become weakened or insolvent. In addition, insurance capital framework modernisation projects in different jurisdictions have also triggered reconsideration of reinsurer counterparty credit risk. One way in which insurance regulators have dealt with reinsurer counterparty credit risk is to consider the receivables due from a reinsurer as an asset and require that capital be set aside in a comparable manner as other assets (ie based on the credit quality of those assets). If a reinsurer posts collateral with the ceding insurer (eg if the reinsurer is unlicensed or unregistered in the ceding firm's jurisdiction), this collateral can frequently be used to offset the reinsurer counterparty credit risk otherwise determined, although the collateral itself will attract a capital charge for credit risk based on the credit rating of the underlying assets.

*Repo:* Broker-dealers utilise repurchase agreements, or repos, as a source of short-term funding. A repo is a secured financing agreement where the broker-dealer sells securities to another party and agrees to repurchase them on a future date at a specified price. The difference between the current market value and the repurchase price represents the interest rate on the borrowed funds, or the repo rate.

A repo transaction from the cash lender's, or buyer's, point of view is called a reverse repo. When a broker-dealer enters into a reverse repo transaction, its greatest risk is that the value of the collateral received from the seller, or borrower, falls, exposing it to counterparty risk. To reduce this risk, the broker-dealer requires that the value of the collateral posted by the seller exceed the amount of the cash lent. This extra collateral is called initial margin, or haircut, and is posted as either additional securities or cash. The size of the haircut varies across collateral types and dealers. The broker-dealer typically marks the collateral to market on a daily basis to avoid over- or under-collateralisation. If its value falls below a certain threshold, the seller is required to post more collateral. If its value increases above a certain level, the broker-dealer must return some collateral to the seller or pay them cash.

*Credit valuation adjustment (CVA):* Basel III introduced the concept of CVA as an additional risk measure. The purpose of this reform is to enhance risk coverage; according to Basel III, "Banks will be subject to a capital charge for potential mark-to-market losses (ie CVA risk) associated with deterioration in the creditworthiness of a counterparty. While the Basel II standard covers the risk of a counterparty default, it does not address such CVA risk, which during the financial crisis was a greater source of losses than those arising from outright defaults". CVA exists also in accounting regulation and is part of the fair value measurement designed by IFRS 13.

CVA risk is the risk of mark-to-market losses due to a degradation of the credit spread of the counterparty. CVA is therefore arithmetically defined as the difference between the default-free value of netting set and its risk-adjusted market value.

Regulators and regulated entities identified the importance of taking CVA risk into account. As a consequence, banks actively manage CVA in general, and some have set up a dedicated CVA desk in order to centralise the risk management of CVA.

### 3.1 Evaluation and management of credit risk

Firms have significantly changed their evaluation and management of credit risk since 2006. The change appears to have resulted jointly from regulatory requirements and from firms' own experiences in dealing with market events since the start of the 2007–08 financial crisis.

In the survey responses, supervisors and firms both noted changes to firms' models for risk measurement and aggregation. There was mention of both an increased focus on stress tests and simple measures, as well as a search for more sophisticated approaches to model credit risk. Supervisors expressed a high level of concern due to the risk of loss caused by inapplicable parameters of the model or incorrect model specification, and concern that technical errors could increase uncertainty and lead to model volatility.

Some firms across sectors noted a number of enhancements to credit risk management processes. Changes to reporting of exposures at a counterparty level and by industry were cited across sectors. Also, enhancements to limit frameworks and regular diligence around monitoring limits and escalation of breaches were commonly cited. Regular "watchlists" of counterparties, industries and/or countries under stress have also been developed. Improvements in systems that enabled more detailed reporting quickly accompanied the improvements in processes.

Most supervisors across sectors noted problems related to firms' regulatory capital models dealing with credit risk. Also, supervisors noted an increasing awareness of differing levels of conservatism among firms. Supervisors thought that regulators had changed in their own risk appetite for approving model applications and waivers.

Firms and supervisors discussed the move away from reliance on external credit rating agency (CRA) counterparty ratings. Some firms commented that they were moving towards a paradigm that encompassed reliance upon both external and internal models with external ratings acting as a constructive reference point. Firms commented that they placed more importance on qualitative analysis of counterparties. Post-financial crisis, US insurance regulators held joint meetings and public hearings to assess the unprecedented volatility in CRA ratings for structured securities. As a result of these assessments, they decided to eliminate reliance on CRA ratings for non-agency residential mortgage-backed securities in 2009. That decision was expanded to include non-agency commercial mortgage-backed securities in 2010. US insurance regulators continue to monitor the reliability of CRA ratings and the appropriateness of that reliance as it pertains to assigning credit quality designations for insurers' bond and preferred stock holdings.

### 3.2 Search for yield

Another source of credit risk is related to investment portfolios. Securities supervisors noted that the secured financing of less liquid assets such as alternative investment funds which employ credit strategies, hedge fund shares, private label MBS or high-yield corporate debt is the most significant source of credit risk in the securities sector.

Usually, insurance assets such as investments in treasuries and capital market bonds can be classified by an external credit rating provider. So, for insurance firms, the main credit risk comes from their bond portfolios, which mainly consist of treasuries and corporate bonds. For instance, for life insurers, credit risks arise from the risks of default by debt security counterparties. This explains that insurance liabilities are backed by a portfolio of fixed income securities – mainly investment grade corporate bonds, below investment grade corporate bonds and municipals. From the perspective of the securities industry, credit risks mainly arise on the level of investment funds. In other words, the direct impact of manifesting credit risks is borne by investors. At the funds' level, bonds, promissory loans and other fixed income instruments bear a significant exposure to issuer credit risks.

Spread risk has come into focus in recent years as a risk for life insurers, in particular, due to a combination of: (i) IFRS accounting proposals for insurers and (ii) the current economic climate. Spread risk is an indirect consequence of the 2007–08 financial crisis, which left a legacy of a long period of low interest rates and a flight to quality. This resulted in a steady reduction in bond yields, especially for the highest-rated bonds, in the fixed income markets. Insurers, especially life insurers with long-duration liabilities to match, have been forced to seek higher returns (net of credit risk) wherever possible. This focus on spreads has also coincided with proposals put forward by the International Accounting Standards Board (IASB) for insurance accounting (as well as EU Solvency II developments) which propose that insurance obligations be valued using risk-free interest rates. Extensive debate globally about these IASB proposals has focused on their fairness and the volatility of the financial results. The proper consideration of interest spreads net of credit risk has been a key point of debate.

### 3.3 OTC derivatives

OTC derivatives are a large driver of credit risk at financial institutions across sectors. In the context of OTC derivatives, credit risk results from the non-performance of the counterparty to pay on an obligation and is typically termed counterparty credit risk. There are multiple measures that can be used to describe the amount of the counterparty credit risk, such as gross or net current or potential exposure.<sup>7</sup> The current exposure of a derivative is generally calculated as the mark-to-market value of the position, on a gross (before application of collateral) and net (after application of collateral) basis. Potential exposure can be calculated in several different ways, but generally involves estimating the amount that a counterparty could owe at a given confidence level assuming certain adverse changes in risk factors.

Table 1 gives an overview of the global OTC derivatives market from Bank for International Settlements data. Gross credit exposures are defined as:

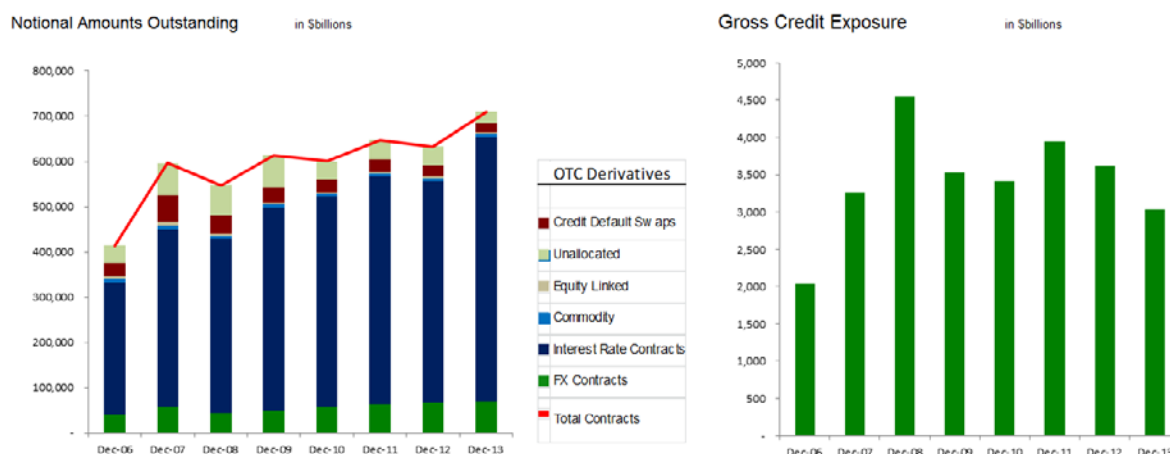
*Gross market values minus amounts netted with the same counterparty across all risk categories under legally enforceable bilateral netting agreements. In other words, the market value of dealers' claims and liabilities are netted when they are claims on and liabilities to the same counterparty and the reporting dealer and the counterparty have a valid, legally enforceable netting agreement. The absolute value of amounts across counterparties is then summed. Gross credit exposures provide a measure of exposure to counterparty credit risk. However, they do not take collateral into account. Collateral would offset losses should the counterparty default.*<sup>8</sup>

<sup>7</sup> See, for example, Senior Supervisors Group, *Progress report on counterparty data*, 15 January, 2014, [www.financialstabilityboard.org/publications/r\\_140116.pdf](http://www.financialstabilityboard.org/publications/r_140116.pdf).

<sup>8</sup> Bank for International Settlements, *OTC derivatives statistics at end-December 2013*, May 2014, [www.bis.org/publ/otc\\_hy1405.htm](http://www.bis.org/publ/otc_hy1405.htm).



Table 1. Global OTC Derivatives Market



Source: Bank for International Settlements *OTC derivatives statistics at end-December 2013*.

As a result of the financial crisis, firms and regulators have paid attention to the risks involved in these transactions and have thought of tools to mitigate the credit risk associated with these transactions. An important tool in this regard is the increased use of margin. Margin is collateral used in OTC derivatives transactions to allow firms to de-risk against counterparty credit risk. There are two types: variation margin is paid on a daily or intraday basis to reduce the exposure created by changes in the mark-to-market value of the derivative, while initial margin is collected from a counterparty to cover potential losses in the event of a default above daily variation margin.

According to the survey results from supervisors and firms, the majority of supervisors and firms across all jurisdictions have observed increased margining activity in the OTC derivatives markets since 2006. While margining has always been used as a credit risk mitigation tool in these markets, firms and supervisors stated that there has been an increase in the use of margin since the financial crisis. This, supervisors and firms contend, is the result of increased “de-risking” amongst firms because of the financial crisis (market situation) and regulatory reforms (eg the European Market Infrastructure Regulation (EMIR) in Europe, Dodd-Frank in the US and margining requirements on non-centrally cleared OTC derivatives).

Given that the regulations requiring collateralisation are at their early stage or have not been implemented yet (EMIR, for example, will only be implemented by December 2015), margin needs will continue to increase in the near future, and supervisors believe that the full impact of this trend is difficult to assess at this early stage.

Research shows that the level of collateralisation is high across the global OTC derivatives market already. The ISDA margin survey for 2014, for example, shows that this is the case amongst both cleared and non-cleared OTC derivatives trades. According to the survey responses, 91% of all OTC derivatives trades (cleared and non-cleared) were subject to collateral agreements at the end of 2013.<sup>9</sup>

The Joint Forum survey shows that supervisors and firms across all sectors and jurisdictions have observed not only an increase in collateralised transactions but also a demand that the collateral used for these transactions be of a higher quality and liquidity (eg cash and highly rated government

<sup>9</sup> [www2.isda.org/functional-areas/research/surveys/margin-surveys/](http://www2.isda.org/functional-areas/research/surveys/margin-surveys/).

bonds). This trend towards more (high-quality and liquid) collateralised transactions is seen not only in the OTC derivatives market but in all other transactions involving the use of collateral as well.

In addition, more collateral swaps between institutions and an increase in the levels of over-collateralisation in securitisations have been observed. These are, again, a direct consequence of the market situation and regulatory change. Firms observed an increase in the frequency of exchanging collateral for derivatives contracts from monthly (pre-2009) to daily.

These trends seem to be fuelling survey respondents' concern that there is a finite amount of high-quality collateral available globally to meet the increasing demand. One firm has reported that, as a result of the demand for more collateral, an increased squeeze on collateral has been observed, especially in jurisdictions with limited high-quality sovereign debt availability. Firms also highlighted the fact that the cost associated with obtaining letters of credit has increased as a result of concerns over firms' creditworthiness.

In addition to the increased use of margin, there has also been an increase in the use of central clearing to mitigate the credit risk associated with OTC derivatives transactions. According to firms and supervisors, this, again, is a result of regulations (eg EMIR and Dodd-Frank) and market practice (firms using central clearing to mitigate counterparty credit risk). This development is resulting in an increased shift of credit risk to CCPs. While CCPs are generally high-quality counterparties, concerns about risk concentrations at CCPs have arisen. This issue is explored in detail in Section 3.4.

A margin risk highlighted by one firm (and one which could become a bigger issue as collateralisation activities increase) involves the liquidation value of the collateral posted as margin, which depends on the condition of the relevant market for that specific collateral. One firm said that it had observed disturbances in important markets for instruments posted as margin in recent years. The example it cited was the impact of the euro zone recession on the real estate markets, in particular in the southern peripheral euro zone countries. Less valuable properties (posted as margin) are harder to place on the market. This risk probably explains the above-mentioned increase in demand for high-quality margin (eg cash). The continued difficult global economic situation suggests that this trend is likely to last at least into the near future.

A related risk that supervisors flagged has to do with specialised collateral posted as margin. Banks often depend on external experts to evaluate the value of specialised collateral (eg airplanes). These experts often have a bias to keep values high and therefore over-valuate the specialised collateral. Thus, there is a risk of firms holding as margin collateral that has a lower realisable value than they think.

Furthermore, firms have highlighted that they have observed increased interconnectivity of global financial institutions and potential systematic liquidity risk which needs to be taken into account to manage risks such as margin risks.

In summary, both supervisors and firms agree that collateralisation has been increasing since 2006. This is a result of new regulations requiring margin and of the market situation: due to the financial crisis, with firms such as Lehman Brothers failing, concerns over financial institutions' creditworthiness have increased. As the new regulations requiring margin are either in their early stages or have not been implemented yet, and the market situation continues to be volatile, there is an agreed expectation amongst firms and supervisors that the increased demand for margin will continue into at least the near future.

Supervisors and firms have both also observed that this increase in demand for margin is increasingly specifically focused on higher-quality and more liquid instruments (eg cash and highly rated government bonds). This increase in demand for higher-quality margin has led to concerns that shortages could emerge as more and more firms chase a finite amount of high-quality liquid margin. Current evidence from the marketplace and academic studies suggests that shortages are unlikely and that therefore any concerns are likely to be unfounded. However, there is evidence that there may be structural and regulatory limitations within the system which can lead to available collateral posted as

margin being immobilised in one part of the system, making it unattainable by creditworthy borrowers. To the extent that such issues could materialise, supervisors may wish to carry out further investigation into the cause of such issues and consider how they might be resolved.

Another possible margin risk highlighted by firms (but not supervisors) was the liquidation value of collateral posted as margin. One firm raised the concern that the liquidation value of certain collateral is volatile (eg property in recession-hit countries). Moreover, the supervisory survey raised a concern about the wrong evaluation (or over-valuation) of specialised collateral. As firms move more and more to the use of collateral as a tool of credit risk management, these items may be worthy of further investigation.

### 3.4 Central clearing

A central counterparty (CCP) interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer and thereby ensuring the performance of open contracts. A CCP becomes counterparty to trades with market participants through novation, an open-offer system, or through an analogous legally binding arrangement. CCPs have the potential to reduce risks significantly to participants through the multilateral netting of trades and by imposing more effective risk controls on all participants. For example, CCPs typically require the posting of margin (collateral) by participants to cover current and future exposures, as well as the sharing of residual risk by direct participants. As a result of their potential to reduce risks to participants, CCPs also can reduce systemic risk in the markets they serve. The effectiveness of a CCP's risk controls and the adequacy of its financial resources are critical to achieving these risk-reduction benefits.

CCPs play a critical role in the financial system and the broader economy. While safe and efficient CCPs contribute to maintaining and promoting financial stability and economic growth, CCPs also concentrate risk, and credit risks are likely to be the most important source of uncovered losses that would cause the failure of a CCP. Recovery tools are therefore needed for addressing and allocating uncovered credit losses. If not properly managed, CCPs can also be sources of financial shocks, such as liquidity dislocations and credit losses, or a major channel through which these shocks are transmitted across domestic and international financial markets. To address these risks, the CPMI and IOSCO have established, over the years, international risk management standards for CCPs as they are considered systemically important and monitor implementation of the standards by its members.

In Europe, major CCPs currently clear a wide range of financial instruments, eg equities, equity-like instruments, bonds, repos, commodities and energy contracts, derivatives and swaps. Central clearing of equities and bonds is relatively straightforward, while non-equity financial instruments are generally more challenging from a risk management point of view. This is especially true for derivatives, for which the CCP has to manage risk over a much longer period of time as compared to equities.

In the equities space in Europe, there is also already a high degree of interoperability between CCPs, which makes it easier to have different CCPs clearing the same product. Interoperability means that, for example, two CCPs clearing a trade for buyer and seller establish some form of cooperation agreement which enables them not only to manage the counterparty risk of their respective customer but also the counterparty risk of the other CCP. In order to manage this default risk, interoperating CCPs call margin from each other on a daily basis.

For the derivatives space, the new Markets in Financial Instruments Directive (MiFID) contains provisions to give competing CCPs access to a trading venue that is not operated by them or their business group, if certain conditions are fulfilled.

Also, EMIR requires sufficiently standardised OTC derivatives to be centrally cleared. However, this obligation does not cover already exchange-traded derivatives (ETDs).

From a credit risk management standpoint, derivatives are of great interest due to their volume and their inherent risks. The segmentation proposed in Europe in the context of MiFID Level 2 work could provide useful insights. Whilst the segmentation was primarily done for trade transparency purposes, differentiation of the various types of derivatives is also helpful to single out particular products that appear to be more relevant in the context of credit risk.

In the segmentation there are three categories: securitised derivatives, derivative contracts and contracts for difference. The first category comprises covered warrants, certificated derivatives, negotiable rights and warrants attached to bonds and medium-term notes that track the performance of another asset. The second category includes interest rate, foreign exchange, equity and commodity derivatives. It should be noted that in EU terminology "derivative" is broadly equivalent with "swap" in the US. As regards commodities, energy derivatives and emission allowance derivatives are included as well. The second category also covers credit derivatives also known as credit default swaps (CDS), which could refer to a single name or an index. The third category encompasses contracts for difference, which are also expressly recognised as financial instruments in Section C no 9 of the new MiFID.

Bearing in mind survey responses, some of the instruments mentioned above are associated with greater credit risk than others. For example, it was repeatedly stated that the more complex a derivative is, the more challenging its risk management. Also, country risk was mentioned as an important factor in the European sovereign debt crisis, which is why CDS served as a tool to mitigate risk, but also as instruments that could have exacerbated credit risk.

## 4. Conclusions

Based on the analysis of the responses from the supervisor and firm surveys and subsequent discussions with firms, the Joint Forum puts forth the following recommendations with respect to credit risk evaluation, measurement and management for consideration by supervisors.

**Recommendation 1:** Supervisors should be cautious against over-reliance on internal models for credit risk management and regulatory capital. Where appropriate, simple measures could be evaluated in conjunction with sophisticated modelling to provide a more complete picture.

**Recommendation 2:** With the current low interest rate environment possibly generating a "search for yield" through a variety of mechanisms, supervisors should be cognisant of the growth of such risk-taking behaviours and the resulting need for firms to have appropriate risk management processes.

**Recommendation 3:** Supervisors should be aware of the growing need for high-quality liquid collateral to meet margin requirements for OTC derivatives sectors, and if any issues arise in this regard they should respond appropriately. The Parent Committees should consider taking appropriate steps to monitor and evaluate the availability of such collateral in their future work while also considering the objective of reducing systemic risk and promoting central clearing through collateralisation of counterparty credit risk exposures that stems from non-centrally cleared OTC derivatives.

**Recommendation 4:** Supervisors should consider whether firms are accurately capturing central counterparty exposures as part of their credit risk management.

# Annex 1

## Regulatory changes

### 1. Cross-sectoral implications

Capital requirements in banking regulation appear to have a significant impact on the demand for a particular class or group of financial instruments. In general, demand is higher for financial instruments that are recognised as “high-quality” (Tier 1 or Tier 2). This affects the trading pattern in markets for different asset classes and could change the overall liquidity profile of an instrument, in some jurisdictions (eg the EU) potentially requiring adjustments to the trade transparency regime which is governed by securities regulation. Another effect could be a shortage of Tier 1 instruments (“collateral crunch”) as opposed to illiquidity in markets for instruments which are deemed to be of lesser quality, eg the corporate bond market. Finally, in the context of differential treatment between asset classes, there is a clear regulatory preference in various pieces of regulation in favour of sovereign debt, the consequences of which are manifold. For example, this might lead to an overinvestment of insurers or banks into such instruments and inadequate risk management due to misconceptions about the likelihood of a government default.

Another important driver with cross-sectoral implications is the G20-initiated OTC derivatives reform. This piece of regulation aims to encourage market participants who deal in the derivatives market to prefer central clearing-eligible contracts due to more favourable collateral requirements. However, this situation leads to a greater concentration of risks to be managed at the CCP level. Whilst CCPs in Europe are authorised under the European Market Infrastructure Regulation (EMIR) and therefore do not necessarily have a banking license, there seems to be a trend for CCPs to also seek to be regulated under banking law. One reason for this could be possible easier access to central bank liquidity.

Finally, in the context of securitisation, risk retention rules broadly equivalent to section 941 of the Dodd-Frank Act were introduced under the Capital Requirements Directive already and subsequently confirmed in regulatory technical standards by the EBA in January 2014. These rules require the sponsor/originator of a securitisation to retain no less than 5% of all issued tranches, thus forcing him to partake in the overall risk.

On the other hand, in the US, the Dodd-Frank Wall Street Reform and Consumer Protection Act was enacted in 2010 as a response to the financial crisis and includes sweeping financial reforms affecting all sectors. Among other things, the Dodd-Frank Act addressed the gap in US financial regulation of OTC swaps by providing a comprehensive framework for the regulation of the OTC swap markets, requiring credit risk retention regulations and requiring that regulations be modified to remove references to, or reliance upon, credit ratings while substituting an alternative standard for creditworthiness. The Dodd-Frank Act also requires the modernisation of insurance regulation. It also created a cross-sectoral Financial Stability Oversight Council (FSOC) and launched a new agency to oversee consumer protection, which includes setting underwriting and servicing standards for consumer credit.

Title VII of the Dodd-Frank Act (Title VII) sets out a series of reforms for derivatives markets, including a new structure for regulating swap market participants, intermediaries, trading platforms and clearing entities. It mandates that certain derivatives transactions as determined by relevant authorities will be subject to central clearing requirements and required to be executed on new electronic trading

platforms when determined by relevant authorities to be subject to the mandatory trading requirement. Additionally, Title VII includes requirements for capital and margin on non-centrally cleared derivatives transactions. International standards for margin requirements on non-centrally cleared derivatives were finalised in September 2013,<sup>10</sup> and US regulators are currently working on margin rulemaking.

In October 2014, the federal banking agencies, the Securities and Exchange Commission (SEC), the Federal Housing Finance Agency (FHFA) and the Department of Housing and Urban Development approved a rule to implement Section 941 of the Dodd-Frank Act regarding securitisation credit risk retention. The rule generally requires that the sponsor of any securitisation transaction retain an economic interest equal to at least 5% of the aggregate credit risk of the assets collateralising any issuance of asset-backed securities (ABS). The rule also provides for zero risk retention for some asset classes, if the securitised loans qualify by meeting defined underwriting criteria.

US banking agencies have adopted amendments that remove references to credit ratings as a standard of creditworthiness in their major regulations. Credit ratings will be replaced by a firm's own internal assessment of creditworthiness. A firm would be permitted to hold less capital against certain securities provided it has an appropriate set of procedures and policies in place.

Title I of the Dodd-Frank Act established the FSOC, which has representation across a broad number of agencies representing the banking, insurance and securities sectors. The FSOC has broad authorities to identify and monitor excessive risks, including credit risk, to the US financial system. The Dodd-Frank Act also includes reforms to address risks posed by systemic financial entities, which include resolution authority and enhanced prudential standards. The FSOC has designated banking organisations and insurance firms as systemically important and is currently assessing other non-bank non-insurance firms.

The Dodd-Frank Act also authorised the creation of the Consumer Financial Protection Bureau (CFPB). The CFPB is an independent agency responsible for consumer protection in the financial sector, and is primarily concerned with mortgages, credit cards and student loans. For example, in January 2014, the CFPB's new qualified mortgage rule went into effect. The rule is intended to prevent consumers from getting trapped in mortgages they cannot afford, and to prevent lenders from making loans that consumers do not have the ability to repay.

Since the global financial crisis has not significantly affected most Asian financial markets, it is not surprising that there have not been as many significant regulatory changes as in other parts of the world such as Europe and the US with regard to credit risk management. In Japan, relevant regulations and Japanese Financial Service Agency's supervisory guidelines were revised to remove several regulatory references to CRA ratings in advance of the publication of the FSB's principles on CRA ratings. Likewise, not many regulatory changes have been made in Korea in terms of credit risk, as relevant stringent banking regulations such as conservative loan-to-value (LTV) and debt-to-income (DTI) limits had been already in place prior to the global crisis.

<sup>10</sup> BCBS-IOSCO, *Margin requirements for non-centrally cleared derivatives*, September 2013, [www.bis.org/publ/bcbs261.pdf](http://www.bis.org/publ/bcbs261.pdf).

## 2. Banking sector

### Regulatory capital

The Basel Committee on Banking Supervision (BCBS) provides a global forum for regular cooperation on banking supervisory matters. BCBS standards serve as a benchmark for national and regional regulators, which are responsible for implementing the standards within their own jurisdiction. Consistency in the adoption and implementation of Basel standards is critical to improving the resilience of the global banking system, promoting public confidence in prudential ratios and encouraging a predictable and transparent regulatory environment for internationally active banks. Therefore, the Basel Committee assesses individual jurisdictions on its regulatory capital regime and the consistency of its capital regime with the international minimum standards established by the Basel Committee.

In the EU, the BCBS Basel III standards were implemented through the Capital Requirements Directive (CRD IV) and Capital Requirements Regulation (CRR), which came into force on 1 January 2014. As financial markets are highly integrated in the EU, the CRD IV and CRR create some form of Single Rulebook, in which, for example, liquidity requirements are harmonised throughout the EU. In order to achieve a maximum harmonisation (ie not only minimum requirements), the CRR is directly applicable to market participants in the EU, whereas the CRD IV gives some room for implementation by national authorities, thus covering provisions addressed to national competent authorities or requiring action on their part.

Credit risk is covered in the Basel standards and consequently in their European implementation in various provisions. In order to better understand the regulatory changes compared to the May 2006 Joint Forum report, a short overview of the timing and implementation of the Basel standards appears useful:

Basel II was originally published in mid-2004, but national implementation was delayed significantly. In the EU, Basel II was implemented by the Banking Regulation and Capital Adequacy Regulation (forming together the Capital Requirements Directive, CRD) and transposed into national law by the end of 2006. There were other jurisdictions which delayed implementation further, so that in the financial crisis of 2008, Basel II was not implemented globally. Basel III was agreed upon in early 2011 and has so far not been universally and fully implemented on a global level.

As far as the assessment of credit risk is concerned, Basel II Pillar 1 provides basically two different approaches: the Credit Risk Standardised Approach (CRSA), which relies heavily on external ratings of CRAs, and the Internal Ratings-Based Approach (IRBA).

Under the CRSA, fixed risk weights are given in different categories of claims which are differentiated by the external rating. For example, regarding claims on sovereigns a triple-A rating is associated with a much lower risk weight than a single-B rating.

The IRBA, in contrast, is not universally permitted by supervisors and sometimes is permitted only for bigger banks. In essence, under the IRBA a bank has to categorise claims, eg as corporate vs sovereign, and then design a model using various risk parameters and weights and demonstrate to the supervisor that the model has a reasonable degree of accuracy.

Whilst the financial crisis has illustrated that an over-reliance on external ratings is not always desirable, the IRBA could also have some pitfalls. For example, banks might be tempted to design their internal models in a manner which would enable them to benefit from lower capital requirements. There are considerations in Europe to address this issue by potentially applying fixed risk weights in a model.

As regards the supervision of proper credit risk management in the form of the Internal Capital Adequacy Assessment Process (ICAAP) (Basel II, Pillar 2), there is some discretion for national competent

authorities in the CRD IV, but nevertheless a harmonised approach, for example, on the leverage ratio to be published by credit institutions.

As an add-on to the Basel framework, the CRD IV in this context holds directors and members of the management and supervisory boards directly accountable for proper risk management. According to Basel III, an important factor to consider in the management of credit risk is whether indicators point to over-proportional credit growth which should be mitigated by a countercyclical capital buffer. Such a buffer of up to 2.5% can be required as an additional capital requirement by the national competent authority. In the EU, harmonised guidance on this issue was issued by the European Systemic Risk Board in mid-2014.

Finally, when it comes to addressing particular risks like counterparty credit risks, Basel III entails the obligation to regularly monitor and potentially adjust this type of risk. The risk management tools already available under Basel II which include complex econometric models for predicting the future development of credit risk were further refined and supplemented by additional parameters and components in Basel III. To enhance the accuracy of these models, Basel III requires initial and ongoing validation in form of backtesting.

In the United States, the banking agencies implemented the BCBS Basel III regulatory capital reforms, as well as certain changes from the Dodd-Frank Act in July 2014 (US capital rule). Under the US capital rule, minimum requirements increased for both the quantity and quality of capital held by banking organisations. Consistent with the international Basel framework, the US capital rule includes a new minimum ratio of common equity Tier 1 capital to risk-weighted assets of 4.5% and a common equity Tier 1 capital conservation buffer of 2.5% of risk-weighted assets that will apply to all supervised financial institutions. The US capital rule also raises the minimum ratio of Tier 1 capital to risk-weighted assets from 4% to 6% and includes a minimum leverage ratio of 4% for all banking organisations. In addition, for the largest, most internationally active banking organisations, the US capital rule includes a new minimum supplementary leverage ratio that takes into account off-balance sheet exposures.

The US capital rule also revised and harmonised rules for calculating risk-weighted assets to enhance risk sensitivity and address weaknesses identified during the financial crisis, including incorporating aspects of the Basel II standardised framework, and alternatives to credit ratings, consistent with Section 939A of the Dodd-Frank Act. The revisions include methods for determining risk-weighted assets for securitisation exposures and counterparty credit risk.

The US capital rule maintained the gross-up approach as an option for banking organisations that were not subject to the market risk rule and replaced the ratings-based approach with a formula-based approach for determining a securitisation exposure's risk weight based on the underlying assets and the exposure's relative position in the securitisation's structure (simplified supervisory formula approach, SSFA).

One of the parameters of the SSFA (the W parameter) measures delinquency of the underlying exposures. The US capital rule would not require additional capital under the SSFA if a loan underlying a securitisation structure experiences a payment deferral not related to credit risk, and such deferral is permitted under the loan documentation. The intent of this aspect of the rule is to keep banking organisations from being subject to higher capital charges for securitisations of student loans and credit cards that offer certain payment and interest rate incentives – eg no payments of principal and interest for the first 12 months following a purchase.

The measure of the counterparty credit risk for (off-balance sheet) repo-style transactions was revised, and the credit conversion factor for most short-term commitments was raised from 0% to 20%.

Credit risk mitigation was addressed in the US capital rule by providing for a more comprehensive recognition of collateral and guarantees. The US capital rule recognised guarantees from sovereigns, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Commission, Federal Home Loan Banks, the Federal Agricultural Mortgage



Corporation (Farmer Mac), multilateral development banks, depository institutions, bank holding companies, savings and loan holding companies, credit unions, foreign banks, and entities that are not special purpose entities that have issued and outstanding unsecured debt securities without credit enhancement that are investment grade and that meet certain other requirements.

The US capital rule requires a banking organisation to hold capital against CVA (the fair value adjustment to reflect counterparty credit risk in the valuation of an OTC derivative contract) risk through an additional capital requirement. Finally, the US capital rule includes in the supplemental leverage ratio a measure of counterparty credit risk for repo-style transactions.

In Asia, the Basel framework serves as a benchmark for both BCBS member and non-member jurisdictions. In this regard, regulatory changes related to credit risk since 2006 have been mostly driven by implementation of the Basel II, 2.5 and Basel III standards in a number of Asian jurisdictions. Currently, Basel III risk-based capital standards are implemented in India and all the EMEAP member jurisdictions (11 jurisdictions),<sup>11</sup> with some discrepancies.<sup>12</sup>

For example, in Japan, Basel II and 2.5 were fully implemented in 2007 and 2011, respectively. This has enhanced risk management practices of Japanese banks. Most recently, Basel III capital rules were implemented in 2013 in accordance with the BCBS implementation timetable. In Korea, Basel 2.5 and Basel III were implemented from 2011 and December 2013, respectively. In India, foreign banks operating in India and Indian banks having presence outside India had adopted Basel II norms by 31 March 2008. All other scheduled commercial banks migrated to Basel II as of 31 March 2009. Basel III capital regulations have been implemented with effect since 1 April 2013 in accordance with the BCBS implementation timetable. In India, minimum capital requirements have been set at 9% of risk-weighted assets (RWAs), in comparison to the international standard of 8%.

## Derivatives

In Europe, in accordance with Basel III to address counterparty credit risk, when banks conclude transactions in derivatives they are required to ensure proper credit value adjustments with respect to the creditworthiness of their counterparties. This requirement drives banks toward more central clearing which is governed in a more detailed fashion by the EU regulation on the central clearing of OTC derivatives (EMIR) and is part of securities regulation (see Section 4 below).

Under Title VII of the Dodd-Frank Act, federal banking agencies in the US have an important role in setting capital and margin for swap entities that are banks, though the regulatory authority over swap agreements is divided between the Commodity Futures Trading Commission (CFTC) and the SEC. Currently, the US banking agencies, CFTC, SEC and FHFA are considering proposed rules regarding margin requirements for OTC derivatives.

Additionally, in July 2011 the federal banking agencies issued guidance to clarify supervisory expectations and sound practices for an effective counterparty credit risk management framework.

The guidance was issued primarily for banks with significant derivatives portfolios and emphasises that such banks should use appropriate reporting metrics and limits systems, have well

<sup>11</sup> EMEAP stands for the Executives' Meeting of East Asia-Pacific Central Banks and comprises central banks and monetary authorities from 11 Asia-Pacific jurisdictions, namely: Australia, China, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore and Thailand.

<sup>12</sup> For example, Basel 2.5 has not yet been implemented in Indonesia, although Basel III has been implemented since January 2014.

developed and comprehensive stress testing, and maintain systems that facilitate measurement and aggregation of counterparty credit risk throughout the organisation. The agencies believe this guidance will address deficiencies exposed during the financial crisis by reinforcing sound practices related to the management and ongoing monitoring of counterparty exposure limits and concentration risks.

Some Asian jurisdictions have been making good progress in the OTC derivatives reform to meet G20 mandates. One of the key achievements was to introduce mandatory central clearing. Basically, CCPs were introduced to minimise or reduce settlement and counterparty risks, which mean that the CCP minimises the impact of a counterparty default in the securities market as well as in the derivatives market.

For example, in Japan OTC derivatives reform has been implemented through a series of amendments to the Financial Instruments and Exchange Act (FIEA). By an amendment to the FIEA in 2010, mandatory central clearing of certain OTC derivatives was implemented in November 2012<sup>13</sup> (and broadened in scope in July 2014<sup>14</sup>), and mandatory reporting to trade repositories was implemented in April 2013. While JPY-denominated interest rate swaps (both Libor- and Tibor-based) are cleared through either a Japanese CCP or a foreign CCP, CDS referenced to Japanese firms (iTraxx Japan) are cleared through a Japanese CCP. Financial institutions are required to report information concerning certain OTC derivatives transactions to the Japanese Financial Services Agency (JFSA) either (i) through a CCP (for centrally cleared trades), (ii) through a designated trade repository or (iii) directly. Almost all OTC derivatives except commodity derivatives are subject to the reporting requirements. An amendment to the FIEA to introduce mandatory use of electronic trading platform for certain OTC derivatives was enacted in September 2012. This new regulation will be implemented in September 2015 to give market participants sufficient time to fully comply with the new requirements.

In Korea, voluntary clearing through a CCP began in March 2014, and the mandatory use of CCPs took effect in June 2014. As a way to manage counterparty credit risk, the CCP takes collateral or margin from members to cover the risk of future price volatilities. This is one of the methods to control risk management being used by the CCP in the securities market. Also, the clearing house should monitor members' transactions in the markets and risk exposures on a daily basis and report the results to the regulatory authority. So, for years Korea's financial authority has had regulatory tools in place to monitor and mitigate the concentration of credit risks in capital markets as well as the OTC market.

In India, OTC derivatives reform has been partially implemented. Trade reporting of OTC products is fully implemented and effective with Clearing Corporation of India Limited (CCIL) as the trade repository. With respect to clearing of OTC products on CCPs, clearing of forex forward segments has been made mandatory on CCPs from 2 June 2014.

## Appraisal reform

On 24 March 2014, US banking agencies, along with the CFPB, the National Credit Union Administration and the FHFA, issued a joint proposed rule regarding appraisal management companies (AMCs) as required by Section 1473 of the Dodd-Frank Act.

Under the proposal, states would need to require that an AMC:

<sup>13</sup> Libor-based JPY-denominated interest rate swaps and CDS referenced to Japanese firms (iTraxx Japan) only.

<sup>14</sup> Tibor-based JPY-denominated interest rate swaps have also become subject to the central clearing requirements as from 1 July 2014.

- register with or obtain a license from the state and be subject to regulatory supervision.
- contract with or employ only state-certified or licensed appraisers for federally related transactions.
- require that appraisals comply with the Uniform Standards of Professional Appraisal Practice.
- establish policies and procedures to ensure compliance with the appraisal independence standards established under the Truth in Lending Act.

## Investment portfolio

In 2011, the US agencies revised their investment permissibility rules to remove references to external credit ratings and replace them with alternative standards of creditworthiness in accordance with the Dodd-Frank Act.

At the same time, the agencies released due diligence guidance standards to explain supervisory expectations for initial and ongoing credit risk assessment of portfolio investments. Banks are expected to conduct an appropriate level of due diligence to understand the inherent risks of a security and determine that it is a permissible investment. The extent of the due diligence should be sufficient to support the institution's conclusion that a security meets the stated "investment grade" standards. The depth of due diligence should be a function of the security's credit quality, the complexity of the structure and the size of the investment. The guidance also sets forth an expectation that the board of directors should oversee management to ensure appropriate decision-making processes are in place.

Similarly, in October 2013, the agencies issued updated guidance on adverse classification standards for investment securities to remove reliance on credit ratings as a standard of creditworthiness.

## Loan underwriting standards

In addition to various reforms set forth in the Dodd-Frank Act, the US agencies have released several inter-agency guidance documents regarding loan underwriting standards. In March 2013, the banking agencies issued updated guidance outlining principles related to safe and sound leveraged lending activities for banks operating in the United States. The agencies revisited the guidance in response to deteriorating underwriting standards on leveraged loans, substantial growth in issuance and significant participation of unregulated non-bank entities. The Interagency Guidance on Leveraged Lending replaced inter-agency guidance on this topic from 2001 and takes a more detailed and prescriptive approach than its pre-economic crisis predecessor. For example, the guidance sets standards for leverage and term of loans originated for portfolio or those that are syndicated to wholesale investors. The guidance includes: a call for clear underwriting and risk rating standards; articulation of certain standards that differed from certain market practices, particularly those of unregulated non-bank entities; detailed requirements for board and senior management reporting; and direction to develop and implement portfolio stress tests of leveraged loans originated to hold and loans originated to distribute.

In response to a growing number of defaults and foreclosures in the US residential mortgage market, the agencies issued Interagency Guidance on Nontraditional Mortgage Product Risks (October 2006) and the Statement on Subprime Mortgage Lending (July 2007). The nontraditional mortgage guidance provides an overview of the loan underwriting standards, portfolio and risk management practices, and consumer protection issues for loan products that allow borrowers to defer payment of principal, and, sometimes, interest. The federal financial regulatory agencies have issued the attached Statement on Subprime Mortgage Lending that addresses issues relating to certain adjustable rate

mortgage (ARM) products that can cause payment shock. The subprime guidance establishes prudent safety and soundness and consumer protection standards that should be followed to ensure that consumers, especially subprime borrowers, obtain loans they can afford to repay and receive information that adequately describes product features.

It is also worth noting the loan underwriting rules and practices in Korea. Even before the global financial crisis in 2007, Korea's supervisory authority introduced strong regulations on residential mortgage lending with conservative loan-to-value (LTV) and debt-to-income (DTI) ratio requirements. These regulations have proved to be more than effective in managing credit risk from borrowers throughout the global financial crisis and thereafter.

## Commercial real estate concentrations

In December 2006, the US agencies issued guidance on commercial real estate concentrations to address risk management of concentrations in loans secured by real estate for construction, land development and other loans as well as multi-family residential and non-farm non-residential properties.

## 3. Insurance sector

The IAIS comprehensively revised its Insurance Core Principles (ICPs), standards and guidance in October 2011, integrating them into one document. The project, which started in 2007, incorporated IMF/World Bank feedback from their Financial Sector Assessment Programme and the FSB's recommendations as well as key lessons and pressure points from the global financial crisis, considering that mismanagement of risks was one of its key roots. The revised ICPs reconfirmed that sound risk management based on solid corporate governance is a foundation of proper operation of financial entities and sound economic development. The revised ICPs have a wider scope and greater depth and strength, requiring a risk-based approach to supervision that addresses all relevant risks at insurers and insurance groups including credit risk. The ICPs relating to corporate governance and risk management were strengthened, particularly in respect of *ICP 7: Corporate Governance*, *ICP 8: Risk Management and Internal Controls*, *ICP 16: Enterprise Risk Management (ERM)* - including Own Risk and Solvency Assessment (ORSA).

Credit risk management is notably covered under the following ICPs:

ICP 13: Reinsurance and other forms of risk transfer – specifically in:

- Guidance 13.0.9 on the assessment of the reinsurance arrangements, including any credit risk mitigation in place.
- Guidance 13.1.2: the cedant's reinsurance strategy should take into account its appetite for credit risk.
- Guidance 13.6.7: for special purpose entities specifically constituted to carry out the transfer of risk to the capital markets, supervisors should be in a position to understand notably the credit risk associated with service providers, including financial guarantors used to protect the position of investors.

ICP 15: Investment – specifically in:

- Guidance 15.3.8: the insurer should be aware of the limits of using credit ratings and, where appropriate, conduct its own due diligence to assess the counterparty credit risk exposure.

#### ICP 16: Enterprise Risk Management (ERM) – specifically in:

- Guidance 16.1.1: the ERM framework should identify and address all reasonably foreseeable and relevant material risks to which an insurer is, or is likely to become, exposed, including credit risk.
- Guidance 16.6.2 on the investment policy in ORSA: the insurer's investment policy should outline its policy towards inherently risky financial instruments; consideration of the associated counterparty credit risk should be included in the investment policy.
- Guidance 16.14.13: to be most effective, an internal model used for the ORSA needs to address all reasonably foreseeable and relevant material risks and assess their impact on the insurer's business given the possible situations that could occur. The risks to be considered should include credit risk.

#### ICP 17: Capital adequacy – specifically in:

- Standard 17.7 and Guidance 17.7.1: the supervisor addresses all relevant and material categories of risk in insurers including credit risk – this should include any significant risk concentrations – and is explicit as to where risks are addressed and as to how risks and their aggregation are reflected in regulatory capital requirements.

#### ICP 20: Disclosure – specifically in:

- Standard 20.4 and Guidance 20.4.6: disclosure about the financial position of the insurer includes appropriately detailed quantitative and qualitative information about financial instruments and other investments by class. It may be appropriate if an insurer discloses sufficient information, including quantifiable information, about its exposure to credit risk.

The IAIS has also initiated a multi-year Self-Assessment and Peer Review programme to assess the observance of the new ICPs, thus complementing the Financial Sector Assessment Programme conducted by the IMF/World Bank. Depending on the results of these assessments, the relevant ICPs will be improved and/or standard implementation efforts will be enhanced.

To take into account the additional complexity and international character of internationally active insurance groups (IAIGs), in 2010 the IAIS started to develop a Common Framework for the Supervision of IAIGs (ComFrame), building on the ICPs and including specific qualitative and quantitative requirements on IAIGs as well as requirements on supervisors. ComFrame will be adopted in 2018 after a field testing phase with volunteer IAIGs and their supervisors. The draft ComFrame also includes IAIG-specific material relevant to credit risk management:

- M2E3-3 and M2E3-3-1: the IAIG establishes, within its ERM Framework, effective means for identifying, measuring, reporting and managing risk on a group-wide basis; this covers credit risk and management of these risks in a cross-border context.
- M2E3-4 and M2E3-4-4: the IAIG conducts a group-wide ORSA to monitor and manage its overall solvency. Through its ORSA, the IAIG considers credit risk.
- M2E4-6 and M2E4-6-1: the IAIG maintains a group-wide reinsurance and risk transfer strategy, which addresses the IAIG's appetite for reinsurer credit risk, including approved security criteria for reinsurance transactions and aggregate exposure criteria to individual or related reinsurers.

The IAIS has committed to develop a risk-based global Insurance Capital Standard for IAIGs within ComFrame, which will also address credit risk.

In Europe, Solvency II is a move towards greater harmonisation. The aim of this EU Directive is to achieve a level playing field for the insurance industry and greater uniformity of supervisory practices in Europe. Similar to the Basel framework, there are three pillars. Pillar 1 is focused on quantitative rules,

especially regarding the valuation of assets and liabilities in order to ensure that institutions always have adequate capital backing.

Pillar 2 is especially relevant in the context of CR management, as it deals with qualitative requirements in relation to the system of governance, amongst which the risk management function plays a key role. Whilst Solvency I was very much oriented towards quantitative criteria to ensure solvency, Solvency II has a greater focus on the quality of the risk management mechanism. A key component of this mechanism is ORSAs, which serve to establish a connection between risk and capital management.

These requirements are accompanied in Pillar 3 by disclosure obligations, for example, the publication of a Solvency and Financial Condition Report (SFCR) and a Regular Supervisory Report (RSR) for the Supervisory Authority.

Like in other pieces of EU financial regulation, details of the Directive are specified in regulatory technical standards (Level 2 measures) and Guidelines (Level 3 measures).

As regards the implementation of Solvency II, there is a delay. Originally, it was envisaged that national transposition of the Directive would be completed at the end of 2012. However, the new timeline according to the Quick Fix 2 Directive is a deadline for national transposition by 31 January 2015 and entry into force of the whole of Solvency II on 1 January 2016. However, there is phasing-in, ie timely prioritisation of important regulatory topics like the system of governance as a present preparatory measure. This also comprises the risk management function and credit risk management on which the European Insurance and Occupational Pensions Authority (EIOPA) issued Level 3 guidance. The basic premise is that the risk management framework of an institution must be capable of identifying, mitigating and measuring credit risk, according to internally defined limits. Credit ratings should be monitored and probabilities of default evaluated, including for unrated exposures. Exposure to speculative assets should be limited, and syndicates with significant exposure to assets bearing credit risk should be capable of hedging that exposure.

Finally, under Solvency II executive directors have more responsibility for risk management, and have to develop a strategy defining their risk appetite and receive regular updates on the development of risks.

As Solvency II was initiated after the May 2006 Joint Forum report, one may conclude that regulation in the area of risk management has become significantly more detailed and demanding in Europe.

Another point is that, following the establishment of the EIOPA, Solvency II will be amended by the Omnibus II Directive, which basically operationalises the powers of this new European Authority, especially with regard to reporting to this authority.

The bottom line of the regulatory developments described above is that the overhaul of the existing EU framework is still a work in progress which will significantly modernise and fortify the way risk management is performed among insurers.

Apart from these EU developments, there have also been changes in national law in order to strengthen the risk management function in insurers. For example, in Germany the accountability of senior managers was enhanced, as they now face criminal sanctions, if they fail to set up an effective risk management.

In the United States, the National Association of Insurance Commissioners (NAIC) began the Solvency Modernisation Initiative (SMI) in June 2008 and subsequently adopted the US ORSA requirements as part of the SMI. The NAIC's Risk Management and Own Risk and Solvency Assessment Model Act, which was adopted in 2011, has an effective date of 1 January 2015.

The NAIC ORSA Guidance Manual, which was adopted by the NAIC Executive Committee and Plenary in March 2012, provides information for insurers on performing its ORSA and documenting risk policies and procedures.

The two primary goals of ORSA, as outlined by the NAIC ORSA Guidance Manual, are to: (i) foster an effective level of ERM; and (ii) provide a group-level perspective of risk and capital as a supplement to the current legal entity review.

Pursuant to the NAIC ORSA Guidance Manual and the recently adopted Risk Management and Own Risk and Solvency Assessment Model Act, an insurer and/or the insurance group of which the insurer is a member will be required to complete an ORSA at least annually to assess the adequacy of its risk management and current, and probable future, solvency position. The requirement for an ORSA will apply to any individual US insurer that writes more than \$500 million of annual direct written and assumed premium, and/or insurance groups that collectively write more than \$1 billion of annual direct written and assumed premium.

In Japan, in response to the revision of the IAIS ICPs in 2010, the JFSA's Insurance Supervisory Guidelines for Insurance Companies and Insurance Inspection Manual were revised in February 2014 to incorporate ORSA requirements and an enterprise risk management framework. In addition, in 2012 Japan's solvency margin requirements applicable to insurance companies were further enhanced by (i) making the solvency margin requirements on a standalone basis stricter and (ii) introducing new solvency margin requirements on a consolidated basis.

## 4. Securities sector

One of the particularly relevant segments regarding the management of credit risk is the investment fund/asset management segment. In the EU, the most recent landmark regulation aiming at greater harmonisation in this area is the Alternative Investment Fund Managers Directive (AIFMD). The AIFMD entered into force on 21 July 2011 and was transposed into national law by 22 July 2013.

The AIFMD constitutes a novelty, as it is focused on the asset manager and not the fund. This is a difference to the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive designed for classic investment funds, which usually have a more conservative investment policy. There are rather high-level provisions on risk management in the UCITS Directive and more detailed Level 3 guidance by CESR from 2009. The guidelines – influenced by the financial crisis – require investment firms to conduct strict due diligence before acquiring complex products like structured finance products. However, such guidelines are not strictly legally binding which is why the provisions in the AIFMD are more demanding for firms. Bearing in mind that the AIFMD covers especially hedge funds and other investment vehicles considered to be more risky, it is understandable that there is a strong focus on enhanced risk management. One important element is that AIFMs need to define their risk appetite and profile for each investment fund at the board level and compare this definition with the actual risks observed on an ongoing basis. Tools for the continuous monitoring of risks are periodic risk reports and dashboards.

In terms of the type of risk, there is a strong focus on liquidity risk, because managing this risk was especially challenging in the financial crisis. However, other types of risk that are covered include credit risk, market risk and counterparty risk.

The AIFMD also requires organisational measures for effective and independent risk management. This means that the risk management and portfolio management functions have to be organisationally separate and independent of one another. Also, when outsourcing is considered, only one of the functions mentioned above is allowed to be delegated to a third party.

All in all, it is fair to say that significant improvements in the asset management area with regard to risk management – both in the UCITS Directive and in the AIFMD – can be observed as compared to the regulatory environment of the Joint Forum Report of May 2006.

Another important piece of regulation in Europe's securities sector is the European Market Infrastructure Regulation (EMIR), which implements the G20 decisions to reform OTC derivatives markets by requiring these instruments to be centrally cleared, if they are sufficiently standardised. EMIR entered into force on 16 August 2012 and has since been complemented by numerous Level 2 technical standards.

EMIR requires an authorisation for CCPs by the national competent authorities; deadline for application was 15 September 2013. Also, on 15 September 2013, risk mitigation techniques entered into force on OTC derivatives which are not centrally cleared. Since 12 February 2014, firms must report all their derivatives holdings to trade repositories.

In terms of credit risk management, the EMIR provisions oblige the CCP to manage the credit risk of the clearing members (CMs) and their potential default. According to Articles 40 and 41 of the EMIR, the CCP's credit risk has to be monitored in close to real time and the risk management model and its parameters have to be validated and approved by the supervisor. The validation process includes regular stress- and back testing and reporting to the national competent authority and the European Securities and Markets Authority (ESMA). The risk management model calculates required margins at least on a daily basis and has to take into account the aspect of procyclicality. For example, CPSS-IOSCO principles set forth that CCPs establish forward-looking, relatively conservative, and stable haircuts calibrated to include periods of stressed market conditions in order to reduce the need for procyclical adjustments. Also, margin models should, to the maximum extent practical and prudent, avoid the need for destabilising, procyclical changes. Another feature to manage counterparty credit risk is a default fund to which CMs contribute and which is designed to protect the CCP from losses from the default of one or more CMs that exceed margin collected from the defaulting CMs.

Additionally, the principles set forth that collateral posted by CMs is expected to be highly liquid. Also, clients are to be protected from problems at the CM level by the segregation and portability of client assets.

All in all, the EMIR is still a work in progress, because a number of technical standards (Level 2 measures) are still to be defined, for example, the definition of sufficiently standardised and therefore CCP-clearing eligible OTC derivatives. However, one may already conclude that as compared to the 2006 regulatory environment, risk management requirements for CCPs have become much more sophisticated, increasing robustness against even lower-probability adverse events.

In the case of the US, prior to the financial crisis the vast majority of derivatives trading occurred in OTC markets rather than on exchanges. The trading involved two counterparties that customised nearly every aspect of the contracts, including the terms of the collateral. In this way, OTC derivatives trading involved bilateral credit risk among counterparties where the amount and form of risk assumed was a function of risk tolerances, objectives and exposures.

Title VII changed this practice. The two primary goals of Title VII are to reduce risk to the US financial system and American taxpayers and to increase transparency in the OTC derivatives market. Title VII aims to reduce systemic risk through mandating central clearing of previously unregulated derivative instruments, and by requiring more capital and liquid collateral to back derivatives trades. Title VII aims to give regulators transparency regarding market participants' trading activities and exposures by mandating comprehensive reporting of OTC derivatives trades. Additionally, Title VII includes provisions that require many market participants to execute trades on regulated exchanges or trading platforms and that require the public dissemination of the prices at which the vast majority of derivatives are executed.



Under the Dodd-Frank Act, regulation is bifurcated. Security-based swaps, which generally include single-name and narrow-based security indices and single-name CDS, are regulated by the SEC. The CFTC has jurisdiction over all other swaps. The two regulators share jurisdiction for certain mixed swaps.

OTC derivatives will be subject to important new clearing, trading, margin and reporting requirements. The majority of OTC derivatives contracts will need to be cleared at a regulated CCP. Thus, CCPs will assume the credit risk that used to be borne by the institutions engaged in an OTC trade. Reassigning this credit risk does not eliminate systemic risk, but rather concentrates it in a small number of CCPs that can then be regulated with respect to risk management.

CCPs will require collateral on all trades, impose a standard set of haircut and eligibility rules to all counterparties and engage in daily reconciliation. The collateral requirements of CCPs are generally more detailed than pre-Dodd-Frank OTC practices, and they greatly incentivise the use of highly liquid securities with limited risk profiles, including cash and US Treasuries. They also render the collateral ineligible for rehypothecation, as the exchange retains control of the collateral.

In India, the Securities and Exchange Board of India (SEBI), as a member of IOSCO, is committed to the adoption and implementation of the recently specified CPSS-IOSCO Principles for Financial Market Infrastructures (PFMIs), which have been developed by CPSS-IOSCO to promote and sustain an efficient and robust global financial infrastructure. The SEBI's circular on 4 September 2013 mandated that all clearing corporations (CCs) must comply with the PFMIs. These include principles regarding how CCs should effectively measure, monitor and manage their credit exposures to participants and those arising from their payment, clearing and settlement processes.

## Annex 2

### Survey instruments

#### Post-crisis stocktake of developments in credit risk management across sectors – supervisory questionnaire

The purpose of this mandate is to update previously published Joint Forum work on risk management practices.<sup>15</sup> It is focused on changes to credit risk management practices in the banking, securities and insurance sectors, with particular consideration given to cross-sectoral items. Credit risk is the risk that a counterparty will fail to perform fully its financial obligations, and can arise from multiple activities across sectors. For example, credit risk could arise from the risk of default on a loan or bond obligation, or it could arise from the risk of a guarantor/credit enhancement provider or derivative counterparty failing to meet its obligations.

1. From your observations, which products are posing particular challenges to credit risk management at:
  - a. Financial conglomerates
  - b. Banking firms
  - c. Securities firms
  - d. Insurance firms
2. Since the publication of the 2006 Joint Forum paper, have you observed firms using new risk transfer tools?
3. Since the publication of the 2006 Joint Forum paper, have any **new products** emerged that pose particular challenges to credit risk management at:
  - a. Financial conglomerates
  - b. Banking firms
  - c. Securities firms
  - d. Insurance firms
4. Since the publication of the 2006 Joint Forum paper, what have been the most significant **market developments** impacting credit risk management at:
  - a. Financial conglomerates
  - b. Banking firms

<sup>15</sup> Joint Forum, *Risk management practices and regulatory capital*, [www.bis.org/publ/joint04.pdf](http://www.bis.org/publ/joint04.pdf), 2001, and *Regulatory and market differences: issues and observations*, [www.bis.org/publ/joint15.pdf](http://www.bis.org/publ/joint15.pdf), 2006.

- c. Securities firms
  - d. Insurance firms
5. Since 2006, what are the most significant **regulatory and statutory changes** impacting credit risk management at:
- a. Financial conglomerates
  - b. Banking firms
  - c. Securities firms
  - d. Insurance firms
6. The following table seeks to understand the impact of market developments and regulatory and statutory changes on firm practices in credit risk management. The table also seeks to understand your level of concern regarding the particular area. Please add additional areas corresponding to your answers to questions 4 and 5.

Area	Market development	Regulatory and statutory change	Any observed changes in firm practices	Level of concern (low, medium, high)
Central clearing				
Use of credit rating agency (CRA) ratings or downgrades by CRAs				
Major country risk (eg euro zone, US, Japan)				
Use of models for risk aggregation				
Bankruptcy of counterparties				
Margin / collateral requirements				
<i>Please insert any other relevant areas from your point of view.</i>				

7. For areas that are rated with a high level of concern in question 6, please provide any additional detail regarding the aspects of the issue that lead to that level of concern.
8. Please explain how you communicate with other organisations involved with the supervision of your firms to exchange views and concerns (eg information-sharing) and any coordination of supervisory actions (eg joint examinations) with respect to credit risk management
- a. within your jurisdiction
  - b. internationally
9. How has your process of supervisory oversight of your firms changed since 2006 with respect to credit risk management in the following sectors?
- a. Financial conglomerates
  - b. Banking firms
  - c. Securities firms
  - d. Insurance firms

10. What changes have you observed since 2006 in terms of collateral risk, eg availability and quality of collateral as more funding has been moving to a secure basis?

## Post-crisis stocktake of developments in credit risk management across sectors – firm questionnaire

The purpose of this mandate is to update previously published Joint Forum work from 2001 and 2006 on risk management practices.<sup>16</sup> It is focused on changes to credit risk management practices in the banking, securities and insurance sectors, with particular consideration given to cross-sectoral items. Credit risk is the risk that a counterparty will fail to perform fully its financial obligations, and can arise from multiple activities across sectors. For example, credit risk could arise from the risk of default on a loan or bond obligation, or it could arise from the risk of a guarantor/credit enhancement provider or derivative counterparty failing to meet its obligations.

1. Name of firm
2. Please mark an "X" in the appropriate boxes below:

	Banking	Securities	Insurance
Primary sector(s) in which your firm operates			
Secondary sector(s) in which your firm operates			
Please advise on your total assets by relevant sector, in your native currency as of year-end 2012			

3. Which products are most significant to credit risk management within each sector selected for question 1 and why? If your firm operates in multiple sectors, please also highlight any challenges specific to being a financial conglomerate.
4. Since 2006, what, if any, **new risk mitigation tools, strategies or other credit risk management methodologies** have you observed or used?
5. Since 2006, what, if any, **new products** are most significant to credit risk management for the sectors in which you operate?
6. Since 2006, what have been the most significant **market developments** impacting credit risk management for the sectors in which you operate?
7. Since 2006, what are the most significant **regulatory and statutory changes** impacting credit risk management for the sectors in which you operate? How have these changes impacted your firm at the (i) legal entity level and (ii) group level?

<sup>16</sup> Joint Forum, *Risk management practices and regulatory capital*, [www.bis.org/publ/joint04.pdf](http://www.bis.org/publ/joint04.pdf), 2001, and *Regulatory and market differences: issues and observations*, [www.bis.org/publ/joint15.pdf](http://www.bis.org/publ/joint15.pdf), 2006.

8. The following table seeks to understand the impact of market developments and regulatory and statutory changes on firm practices in credit risk management since 2006. The table also seeks to understand your level of concern regarding the particular area. Please add additional areas corresponding to your answers to questions 5 and 6. Please add a narrative response for all boxes except "Level of concern", for which you may answer "low," "medium" or "high."

Area	Market development	Regulatory and statutory change	Any changes in firm practices	Level of concern (low, medium, high)
Central clearing				
Use of credit rating agency (CRA) ratings or downgrades by CRAs				
Major country risk (eg euro zone, US, Japan)				
Use of models for credit risk				
Bankruptcy of counterparties				
Margin / collateral requirements				
<i>Please insert any other relevant areas from your point of view.</i>				

9. For areas that are rated with a high level of concern in question 7, please provide any additional detail regarding the aspects of the issue that lead to that level of concern.
10. Please explain material changes since 2006 to key operations, risk management, internal controls and governance frameworks within your firm related to credit risk management.
11. Please explain material changes since 2006 related to your firm's use of models to aggregate credit risk within your firm. In particular, please describe changes to your firm's methodology for aggregating credit risk arising from different sectors.
12. Please explain the scope, process and intensity of your communication with your regulatory supervisors with respect to credit risk management at:
- a. the legal entity level
  - b. the group level
13. What, if any, changes have you observed since 2006 in terms of collateral risk, eg availability and quality of collateral as more funding has been moving to a secure basis?

## Annex 3

### List of members of the Joint Forum Working Group on Risk Assessment and Capital (JFRAC) and the Credit Risk Management workstream

<b>Chair</b>	<b>Philipp Sudeck</b>	<b>Bundesanstalt für Finanzdienstleistungsaufsicht</b>
France	Arnaud Sandrin Vincent Jaouen	Autorité de Contrôle Prudentiel et de Résolution Autorité de Contrôle Prudentiel et de Résolution
Germany	Raoul Jacobs Steffen Meusel	Bundesanstalt für Finanzdienstleistungsaufsicht Bundesanstalt für Finanzdienstleistungsaufsicht
Japan	Jutaro Kaneko Arfiya Eri Takashi Hamano Hidetaka Tabata	Bank of Japan Bank of Japan Financial Services Agency Financial Services Agency
Korea	Jae-Ryong Jeong	Financial Supervisory Service
Spain	Marta Estavillo Jose Manuel Portero	Bank of Spain Comisión Nacional de Mercado de Valores
United Kingdom	Peter Norwood	Financial Conduct Authority
United States	Holly Kirkpatrick Robert Esson George Lavdas Michelle Danis (*) Lubit Cara	Board of Governors of the Federal Reserve System National Association of Insurance Commissioners Securities and Exchange Commission Securities and Exchange Commission Securities and Exchange Commission
EU	Rebecca Wood	European Commission
IAIS	Lance Leatherbarrow	International Association of Insurance Supervisors
IOSCO	Alp Eroglu	International Organization of Securities Commissions
Secretariat	Motohiro Hatanaka	Basel Committee/Joint Forum Secretariat

(\*) Chair of the Credit Risk Management workstream