



DEUTSCHE BÖRSE
GROUP

The Global Derivatives Market A Blueprint for Market Safety and Integrity

White Paper

Table of Contents

	Executive Summary	4
1	Introduction	5
2	Status Quo of the Global Derivatives Market	6
	2.1 Overview of the global derivatives market	6
	2.1.1 Fundamentals of derivatives	6
	2.1.2 Benefits of derivatives	9
	2.1.3 Size and growth of the market	10
	2.2 The global derivatives market against the backdrop of the financial crisis	11
	2.2.1 Resilience of the derivatives market	11
	2.2.2 Market deficiencies	12
3	Blueprint for Market Safety and Integrity	17
	3.1 Imperatives for a well-functioning derivatives market	17
	3.2 Guidelines for a market blueprint	20
	3.2.1 Maximum use of derivatives trading on organized markets	21
	3.2.2 Maximum use of CCPs where trading on organized markets is not feasible	22
	3.2.3 Collateralization of bilateral exposures, ideally by third-party collateral managers	25
	3.2.4 Mandatory registration for all derivative contracts	26
	3.3 Standardization as a main enabler	28
4	Roadmap for Implementation	30
	4.1 Implementation measures for a safer derivatives market	30
	4.1.1 Establishing central data repositories	30
	4.1.2 Promoting collateralization of bilateral exposures (preferably through third parties)	31
	4.1.3 Increasing use of CCP clearing	31
	4.1.4 Promoting trading on organized markets	32
	4.2 Contributions of key stakeholders	32
5	Conclusion	34
	List of Exhibits	35
	Glossary	36
	References	43
	List of Abbreviations	46

Executive Summary

The global derivatives market is a main pillar of the international financial system and the economy as a whole. Today, businesses around the world use derivatives to effectively hedge risks and reduce uncertainty about future prices. Derivatives contribute to economic growth and increase the efficiency of markets by improving price discovery for assets.

It is important to note that derivatives did not cause the financial crisis and need to be differentiated from securities, e.g. equities, bonds or structured securities (ABS, CDOs, CLOs etc.). Nevertheless, the derivatives market has certainly been affected by and has played a role in the recent market turbulences. This was inevitable for two main reasons: first, its sheer size with €471 trillion in notional amount outstanding and a gross market value of €24 trillion as of December 2008; and second, the relevance of derivatives for the global financial system. In the course of the crisis, major market participants have reached the brink of default or failed, and have generated unprecedented oscillations in market volatility.

Some parts of the market and its institutions have proven resilient, particularly derivatives traded on exchanges as well as derivatives cleared by central counterparties (CCPs). On the occasion of the default in September 2008 of Lehman Brothers International (Europe), one of the largest derivatives players globally, central counterparties almost fully resolved all open positions within a short period of time.

At the same time, the financial crisis has unearthed deficiencies in less or non-regulated segments of the derivatives market that lack adequate risk management and mitigation as well as the necessary level of transparency. Excessive bilateral exposures with insufficient collateralization were built up in the OTC derivatives market and exacerbated the financial crisis. As market participants in the OTC derivatives market segment are highly interconnected, defaults of system-relevant market participants could have caused disruption within the whole financial system.

In order to minimize this systemic risk and to create a well-functioning market, both safety and integrity need to be ensured. As such, a blueprint that effectively reduces the systemic risk in the derivatives market should incorporate the following guidelines:

- Maximum use of derivatives trading on organized markets
- Maximum use of central counterparties where trading on organized markets is not feasible
- Bilateral collateralization of derivatives exposure (preferably handled by a third party) when organized trading or the use of CCPs is not feasible
- Mandatory registration of open risk positions and reporting standards for all derivative contracts

A joint effort by market participants, infrastructure providers and regulators is required to strive for a swift and consistent implementation of the blueprint in order to restore and sustainably strengthen market safety and integrity.

1 Introduction

Over the past 20 years, the financial market has seen strong growth and innovation, and derivatives have contributed substantially to this impressive development. Today, they are a main pillar in the global financial system, enabling businesses around the world to effectively hedge risks and to invest. In this way, derivatives contribute to economic growth and employment.

Given the scale and volume of today's global derivatives market, it has become more complex and interconnected. This, together with gaps in the regulatory and supervisory framework as well as higher leverage, has put some of its segments at risk. The financial crisis of 2007–2009, which induced the meltdown or bailout of several banks and other financial institutions (many of them also active in the derivatives market), sheds light on a number of deficiencies – particularly in the over-the-counter (OTC) segment, where the existing market structure lacks sufficient means to mitigate and manage risks.

Currently, regulators and supervisors are discussing measures to address safety concerns in the derivatives market. This paper seeks to contribute to this debate in an objective and fact-based manner by developing a blueprint for a safer global derivatives market.

Chapter 2 illustrates the status quo, benefits, and strengths and deficiencies of the derivatives market in the context of the financial crisis. Chapter 3 formulates the requirements for a well-functioning derivatives market and outlines a market blueprint. A roadmap to implement this blueprint is detailed in chapter 4. Chapter 5 draws overall conclusions.

2 Status Quo of the Global Derivatives Market

As a background for the market blueprint, it is useful to first of all gain a clear understanding of the global derivatives market in the current environment. Building on Deutsche Börse Group's first White Paper on the derivatives market¹⁾, this chapter gives an overview of the global derivatives market (2.1), describing the fundamentals of derivatives (2.1.1), and their uses and benefits (2.1.2). A discussion of the size and growth of the market follows (2.1.3), concluding with an assessment of the strengths and deficiencies of derivatives in light of the ongoing financial crisis (2.2).

2.1 Overview of the global derivatives market

Derivatives are financial instruments that are traded among market participants over the counter (OTC) or via regulated markets (on-exchange), whereby the former comprises the majority of the market. Derivatives are used to protect against and manage risks, offering their users various benefits compared to other financial instruments. Considering the key role

played by the global derivatives market in the global economy, it is not at all surprising that the market has seen such strong growth over the past decades.

2.1.1 Fundamentals of derivatives

A derivative is a contract between a buyer and a seller, which, upon having been entered into, entails a transaction to be fulfilled at a later date. Over the lifetime of the contract, the value of a derivative fluctuates with the price of its "underlying". As contracts, derivatives have to be distinguished from securities, which include equities, bonds, ETFs/ETCs/ETNs, structured securities (ABS, CDOs, CLOs etc.), and derivative-like instruments such as certificates or warrants²⁾ (Exhibit 1). The focus of this White Paper is on derivatives for wholesale and professional investors³⁾, which can be classified by how they are traded, their underlying, and their product type (see box).

1) See Deutsche Börse Group 2008.

2) These are structured securities usually sold by banks to retail customers. Their value and/or coupon payments usually depend on one or several underlyings.

3) The total market share of retail investors is negligible (below 1 percent in terms of notional amount outstanding, see Deutsche Börse Group 2008).

Exhibit 1: Overview of the financial instruments universe

Users	Securities		Derivatives	
	On-exchange	OTC	On-exchange	OTC
Retail	<ul style="list-style-type: none"> ■ Equities ■ Bonds 		<ul style="list-style-type: none"> ■ Equity-linked derivatives¹⁾ 	<ul style="list-style-type: none"> ■ CFDs
	<ul style="list-style-type: none"> ■ ETFs/ETCs/ETNs ■ Certificates (e.g. index or bonus certificates) ■ Warrants ■ Funds/UCITS 			
Wholesale/ professional	<ul style="list-style-type: none"> ■ Equities ■ Bonds ■ ETFs/ETCs/ETNs ■ Funds/UCITS 		<ul style="list-style-type: none"> ■ Fixed-income derivatives ■ Equity-linked derivatives ■ Commodity derivatives 	
		<ul style="list-style-type: none"> ■ Structured credit-linked securities (CDOs, MBS etc.) ■ Other ABS 		<ul style="list-style-type: none"> ■ Foreign exchange derivatives ■ Credit derivatives

■ Focus of White Paper

1) Only relevant in few regions, e.g. equity options in the US and the Netherlands, and equity index futures and options in Korea; negligible in most of Europe

Classification criteria for derivatives

- **Type of derivative and marketplace:** Derivatives can be traded bilaterally or multilaterally OTC (usually customized contracts) or multilaterally on exchanges (standardized contracts). The OTC segment accounts for 90 percent of the overall market size in terms of notional amount outstanding (Exhibit 2).
 - **Type of underlying:** Underlyings can be financial instruments themselves, physical assets, or any risk that can be measured. The most common underlyings are bonds and interest rates (80 percent of notional amount outstanding), followed by foreign exchange (9 percent), credit (8 percent), equities and equity indices (2 percent), or commodities (1 percent)⁴⁾ (Exhibit 2). Exotic underlyings include, for example, weather, freight rates, or economic indicators.
 - **Type of product:** The three main types are forwards (or futures), options and swaps.⁵⁾ They differ in terms of their dependence on the price of the underlying.
-

Derivatives are traded in one of two ways: either OTC or on regulated markets, i.e. on exchanges. Exchange-traded derivatives are fully standardized whereas most OTC derivatives are customized contracts between two trading parties. Additionally, the OTC and the on-exchange segments are structured differently (Exhibit 3):⁶⁾

Trading: The OTC segment accounts for 90 percent of the market in terms of notional amount outstanding. Here, the market volume is split equally between bilateral trading among market participants and multilateral trading, i.e. trading across a number of different market participants on organized marketplaces⁷⁾ such as interdealer-brokers or electronic crossing networks. Exchange trading accounts for 10 percent of the market and is multilateral by definition.⁸⁾

Clearing and collateralization: Approximately one-third (33 percent) of the market's notional are cleared via central counterparties (CCPs), which consolidate and manage risks. Exchange-traded derivatives are always cleared centrally with CCPs, thus ensuring the full collateralization of open risk positions and guaranteeing the fulfillment of contracts. For OTC derivatives that are not CCP-cleared, risks are partially mitigated through bilateral collateralization, i.e. the pledging of assets to secure fulfillment of a transaction. A large share of derivatives exposure is currently not collateralized at all (approximately 32 percent).

Registration/reporting: Registration is not mandatory for OTC derivatives in most jurisdictions. Moreover, there is no comprehensive reporting of trading volumes and market prices (post-trade transparency). In practical terms, this means a lack of market transparency in certain OTC segments. Market information is only provided on a larger scale by regulated markets, by CCPs and by so-called trade repositories; combined they account for approximately 37 percent of the market. In the case of exchange-traded derivatives, all trades are registered and there is a comprehensive post-trade transparency regime, thereby ensuring optimal transparency on contracts traded and risk positions.

4) Market shares in terms of notional amount outstanding (based on data from the Bank for International Settlements, BIS 2009a, and World Federation of Exchanges Statistics, www.world-exchanges.org). Notional refers to the nominal value of a derivatives contract. The notional amount outstanding is the nominal value of all open derivatives contracts, i.e. the nominal market size. It is a stock measure similar to the market capitalization of bond or equity markets and is thus, from a risk management perspective, more relevant than trading volumes.

5) See glossary for a detailed explanation of forwards, futures, options and swaps.

6) Market shares in terms of notional amount outstanding based on BIS 2009a, ISDA 2009a, annual reports, press statements; partially estimated.

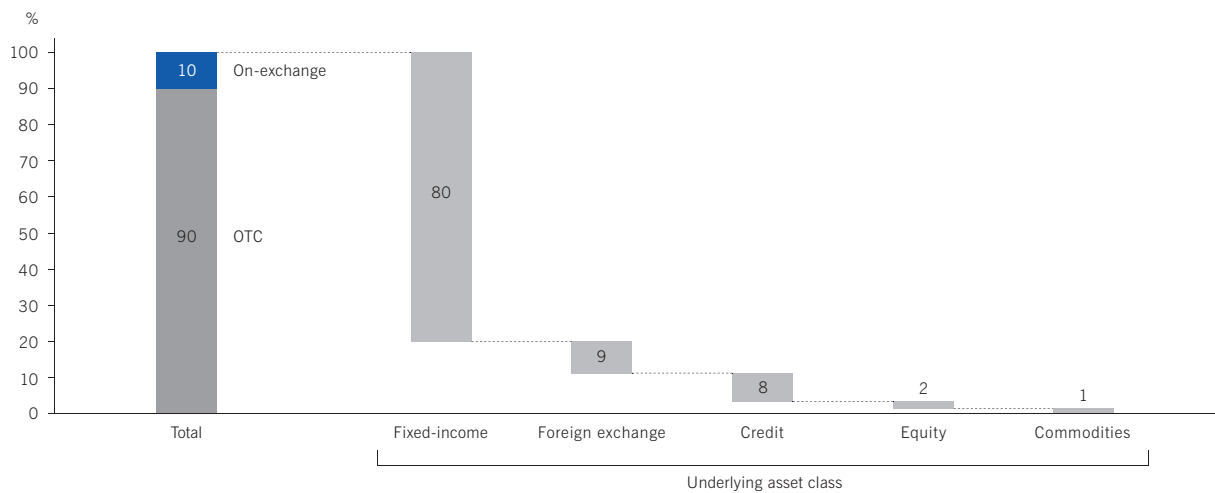
7) For the remainder of this document the term "organized markets" comprises regulated markets (i.e. derivatives exchanges), multilateral trading facilities (MTFs) as well as electronic crossing networks or interdealer-brokers for OTC derivatives. "Organized markets" is thus defined broader than the term "public trading venues", which encompasses regulated markets and MTFs.

8) In terms of trading volume the market is approximately evenly split between the OTC and the on-exchange segment.

Exhibit 2: Breakdown of the global derivatives market – OTC versus on-exchange and by underlying asset class¹⁾

Notional amount outstanding as of December 2008

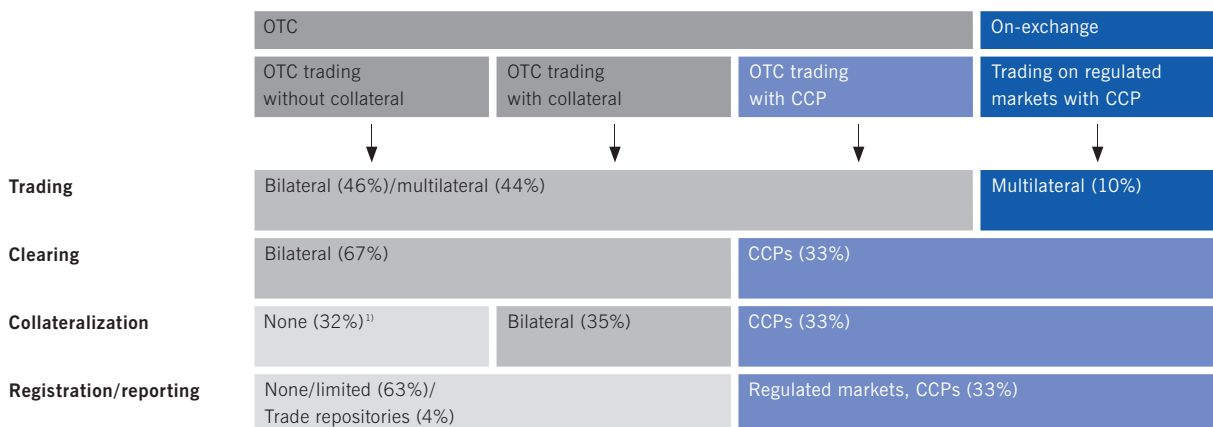
Total = €471 trillion



1) Exotic underlyings (e.g. weather, freight rates, economic indicators) accounting for less than 0.3 percent
Source: BIS, WFE, FIA

Exhibit 3: Current derivatives market structure

Approximate market share in terms of notional amount outstanding



1) Based on share of trades not collateralized
Source: BIS, ISDA, annual reports, press

2.1.2 Benefits of derivatives

Derivatives provide a range of benefits by enabling the exchange of future risks. Not only can businesses around the world effectively use derivatives to hedge risks by reducing uncertainty about future prices. Derivatives also foster investments, since investors can achieve better returns at a lower cost. In this way, derivatives fulfill an important function in the price discovery of assets.

Protection against risks

The most important benefit of derivatives is the ability to manage market risk, i.e. to lower the actual market risk level to the desired one.⁹⁾ This task of minimizing or eliminating risk, often called hedging, means that derivatives can safeguard corporates and financial institutions against unwanted price movements. For example, an airline can today lock in the price for fuel needed at a future point in time using a kerosene forward. Even with a minimum upfront investment, derivatives serve to limit the volatility of companies' cash flows. This in turn gives rise to more reliable forecasting, lower capital costs, and higher capital productivity – all of which contribute to economic growth.

Possibility of trading on future price expectations

A second essential function fulfilled by derivatives is price discovery, allowing investors to trade on future price expectations. By trading in derivatives, investors effectively disclose their beliefs on future prices and increase the amount of information available to all market participants. In this way, derivatives enhance valuation and thereby allocation efficiency.

For example, investors can take positions against the market if they expect an asset to drop in value (e.g. a derivatives contract to sell a single stock). Alternatively, they can take the market position (e.g. a futures contract on a commodity) if they perceive an asset to be undervalued and expect its value to rise again in the future. Adopting such strategies is important to reduce the risk of assets being subject to under- or overvaluation and allows a consistent valuation over time.¹⁰⁾

Derivatives have further benefits. They can be employed for hedging and investment purposes at very low transaction costs, especially in comparison to investing directly in the underlying.¹¹⁾ In addition, derivatives enable rapid innovation of products that can be easily customized to the needs of any user.

Benefits of derivatives that make them indispensable to the global financial system and the economy

Derivatives

- provide risk protection with a minimum upfront investment and capital consumption.
 - allow investors to trade on future price expectations thus improving efficiency of price discovery.
 - have very low overall transaction costs compared with investing directly in the underlying asset.
 - allow fast product innovation because new contracts can be introduced rapidly.
 - can be customized to the specific needs of any user.
-

9) See for instance Hull 2008; market risk is the risk of a loss due to moves in market factors.

10) For a review of relevant literature see Mayhew 2000.

11) See Deutsche Börse Group 2008.

The role of derivatives in the global financial system and the economy

The global derivatives market is a main pillar of the international financial system and economy. As an indispensable tool for risk management and investment purposes, derivatives are used by more than 94 percent of the world’s largest companies.¹²⁾ They contribute to improving operational, information, price, valuation and allocation efficiency, thus substantially increasing the efficiency of financial and commodity markets.¹³⁾ Derivatives help lower the cost of capital and enable firms to effectively invest and channel their resources. These factors are an important driver of economic growth.¹⁴⁾ Europe – as the most important region in the global derivatives market – stands to benefit immensely from the positive impact of derivatives.¹⁵⁾

2.1.3 Size and growth of the market

The derivatives market continues to be the largest single segment of the financial market. With €471 trillion in notional amount outstanding as of December 2008, the global derivatives market

was more than five times larger than the global equity and bond markets combined.¹⁶⁾ Historically, derivatives have shown strong growth. The size of the market increased by approximately 25 percent per year between December 1998 and June 2008 (Exhibit 4a). In the second half of 2008, however, the market volume shrank for the first time since data has been recorded. Declining market activity in the wake of the financial and economic crisis may be one plausible reason.¹⁷⁾ In contrast, the gross market value of OTC derivatives has nevertheless continued to grow strongly, by over 66 percent in the second half of 2008 alone to €24 trillion because of increased asset price volatility and lower interest rates (Exhibit 4b).¹⁸⁾

12) See ISDA 2009b.
 13) See Tobin 1984, Bienert 1996, and Mayhew 2000.
 14) See Carmichael/Pomerleano 2002, Levine 1997, Domowitz/Steil 2002.
 15) Europe accounts for approximately 45 percent of the global derivatives market in terms of notional outstanding.
 16) Measured by their market capitalization; see BIS 2009a and World Federation of Exchanges Statistics (www.world-exchanges.org).
 17) Additionally, trade compression, i.e. the termination or replacement of offsetting trades, has driven down market size (compression has been the main driver behind the €11 trillion decline in notional amount outstanding for credit derivatives; see BIS 2009a).
 18) See BIS 2009b.

Exhibit 4a: Derivatives notional amount outstanding

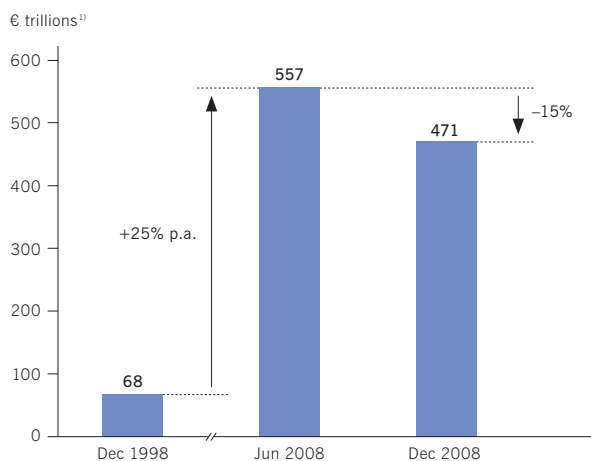
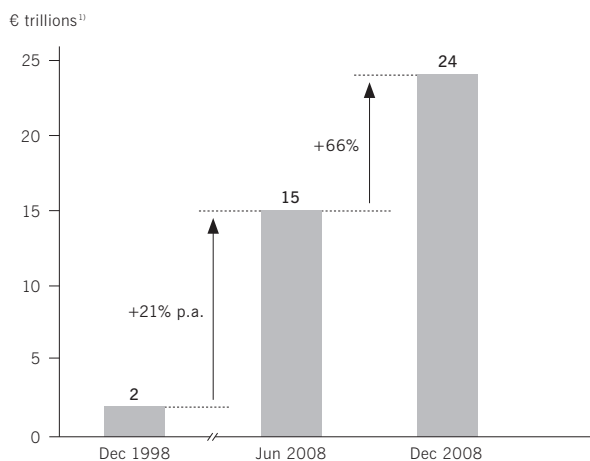


Exhibit 4b: OTC derivatives gross market value²⁾



1) Converted from USD at year-end 2008 exchange rate, percentages based on unrounded figures
 2) Exchange-traded derivatives cash settlement occurs on a daily basis, i.e. changes in value are compensated each trading day; gross market value is thus zero. Source: BIS

2.2 The global derivatives market against the backdrop of the financial crisis

The derivatives market as a whole has functioned well despite the recent market turmoil. Derivatives per se did not cause the financial crisis.¹⁹⁾ Nevertheless, the derivatives market has played a role in recent market turbulences due to the importance of derivatives for the global financial system and the sheer size of the market.²⁰⁾ In the course of the crisis so far important market participants have reached the brink of default or have failed outright, generating unprecedented oscillations in market volatility. Confronted with this “stress test”, some parts of the market and its institutions have proven resilient. In other areas, however, deficiencies have been uncovered that make the need for reform evident.

2.2.1 Resilience of the derivatives market

Despite unprecedented market turbulences, sizable areas of the derivatives market have continued to serve their role well with respect to investment and protection against market risk. Exchange trading of derivatives and CCP clearing of standardized derivatives traded both on-exchange and OTC have been a stabilizing factor and proven especially resilient in three main aspects: a) trading activity and, hence, liquidity have been sustained in these areas of the derivatives market throughout the crisis, b) CCPs have effectively mitigated and managed risks, and finally, c) CCPs and trade repositories have provided the required transparency, e.g. on risk positions.

Continued liquidity throughout the financial crisis

Unlike other financial instruments, exchange-traded and standardized OTC derivatives have remained remarkably liquid throughout the financial crisis. This means that at any point in time, buyers have been able to find sellers, and vice versa, without significant frictions. Market participants have continued to be able to hedge their risks or to close out

positions at reasonable cost. This clearly distinguishes standardized derivatives from asset-backed securities or similar structures (CDOs, CLOs etc.), where investors – even more than one year after the onset of the financial crisis – still face severe market illiquidity, and are thus unable to trade or close out their positions at an acceptable price.

Standardization and organized trading have helped these segments to stay liquid. All exchange-traded derivatives are standardized with prespecified contract parameters (e.g. size, maturity date). Organized trading ensures that all buy and sell orders are gathered onto a single “marketplace” (i.e. pooling of trading interests). This creates transparency on price formation and means that market activity can be monitored to prevent manipulation and fraud, thus helping to boost trading activity and to safeguard market integrity.

Risk mitigation and management by CCPs

CCPs have played a pivotal role with regard to the resilience of the derivatives market in the financial crisis. CCPs have effectively reduced and managed counterparty risks, created transparency on risk positions, and helped to ensure the operational efficiency of the market. Not surprisingly, CCPs are widely esteemed.²¹⁾

19) The crisis is commonly attributed to macroeconomic imbalances driving down interest rates globally leading to a credit expansion and increased risk taking by investors and financial innovation in the form of structured asset-backed securities; credit default swaps are, however, sometimes identified as having enabled the massive credit expansion before the crisis; see FSA 2009, Hrovatin/Levin/Nava/Planta 2009.

20) Moreover, large financial market participants such as international banks are active in all areas of the financial market. A crisis in one market segment can thus have repercussions in other market areas.

21) “CCPs have proven to be resilient even under stressed market conditions [...] and showed their ability to ensure normal market functioning in case of failure of a major market player”, Hrovatin/Levin/Nava/Planta 2009, p. 22.

Functions of a CCP²²⁾

Central counterparties (CCPs) provide clearing of all trades (risk management) and position management of all open contracts (trade management). The CCP becomes a counterparty to each market participant, guaranteeing the fulfillment of each contract and nets all offsetting open derivatives positions of each trading party across all other trading parties (multilateral netting).

As the CCP keeps track of all trading parties' open positions, it also receives exercise requests and serves as a middleman to the other counterparty of a contract being exercised. The CCP usually also generates the settlement instructions for the payments resulting from derivatives contracts and, if necessary, for the physical transfer of the underlying asset.

CCPs have proven their worth in risk management and mitigation, for example, in the wake of the default of Lehman Brothers in September 2008.²³⁾ As one of the largest OTC and exchange-traded derivatives players, Lehman was the counterparty on numerous derivatives contracts. In the case of centrally cleared derivatives, CCPs achieved a near-complete resolution for all open positions within less than 15 trading days.²⁴⁾ Additionally, CCPs were able to effectively shield the accounts of market participants trading through Lehman from the effects of its bankruptcy. In this way, CCPs mitigated market disruptions and prevented spillover effects, thus minimizing risks to all parties involved. The collateral that CCPs had asked from Lehman was fully sufficient to cover its obligations.

Transparency on CCP-cleared and other registered trades

CCPs and trade repositories, i.e. providers that collect critical data on OTC transactions such as CDS contracts, have provided the necessary transparency in the course of the crisis. This has helped to reassure supervisors and market participants that risk positions are manageable, preserving confidence in regulated markets as well as in selected OTC trading venues.²⁵⁾

In addition, CCPs and trade repositories can serve as a vital early-warning function for market participants and supervisors in case excessive risks are taken. This adds significantly to the stability of the market as a whole.

2.2.2 Market deficiencies

The financial crisis has brought to light several deficiencies in the derivatives market – specifically in those segments lacking standardization and centralized clearing. Consequently, the once strong market growth coupled with blind spots in regulation and supervision have given way to a substantial build-up of systemic risk, in the OTC segment.²⁶⁾

22) See also Deutsche Börse Group 2008.

23) Lehman Brothers Holdings Inc. filed for bankruptcy in September 2008. The British bank Barclays subsequently acquired large parts of Lehman's US operations. Lehman's main European subsidiary Lehman Brothers International Europe remains in administration.

24) See CCP12 2009.

25) For example, the DTCC, a firm that operates the largest CDS data repository, was able to dispel unfounded speculation about excessive risk exposures in CDS trading, which was causing unease among market participants following the Lehman and General Motors insolvencies (Thompson 2009, see also Chapter 3).

26) "For most of the past 30 years, the [OTC] markets developed in something of a regulatory vacuum, being regarded legally as neither securities nor futures contracts.", Group of Thirty 2009, p. 53.

Deficiencies of the market include:

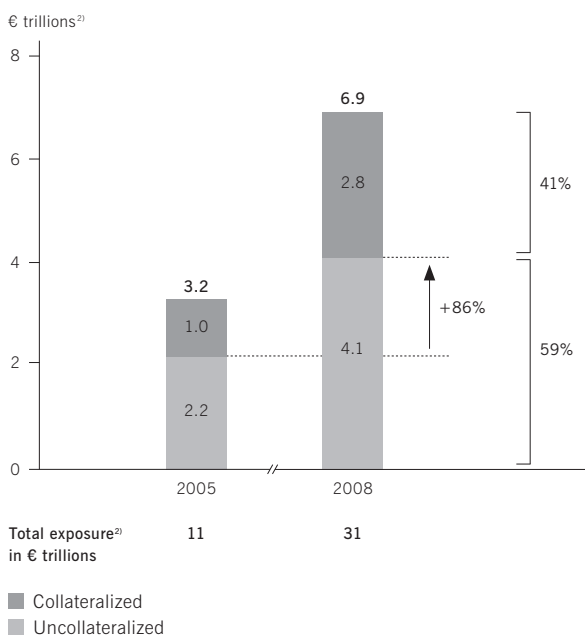
- Excessive build-up of bilateral exposures and insufficient collateralization, resulting in a dramatic increase in counterparty risks
- Insufficient risk valuation and risk management capabilities
- Interconnectedness and complexity
- Lack of transparency in selected areas of the market, hindering market participants and supervisors from recognizing existing risks
- Operational inefficiencies and limited legal certainty

Excessive build-up of bilateral exposures

Following substantial growth of the derivatives market, bilateral exposures and thus risks have increased over the last few years. As a result, banks, institutional investors, corporates and other derivatives market participants today stand to lose significant amounts due to their derivatives trading.

The total exposure from OTC derivatives transactions increased to more than €31 trillion in December 2008.²⁷⁾ Considering the effects of netting (i.e. cancelling opposing claims of two or more counterparties), an exposure of €6.9 trillion remained. Of this amount, only €2.8 trillion (41 percent) were actually secured via collateral. As a consequence, uncollateralized exposures totalled €4.1 trillion (59 percent) in December 2008; an increase of 86 percent compared to 2005 (Exhibit 5). In sum, OTC market participants therefore still have unsecured risks on their books amounting to approximately 36 percent of EU GDP.

Exhibit 5: Net counterparty risk exposure and extent of collateralization within OTC market¹⁾



1) Based on BIS current exposure method (total exposure calculated as sum of market values and add-on for potential future exposure)
 2) Converted from USD at year-end 2008 exchange rate
 Source: BIS, BBA, Standard and Poor's, ISDA

A substantial share of derivatives trading activity is concentrated in the hands of a few international banks (so-called broker-dealers). Accordingly, their exposures from derivatives are high. For example, the four largest US derivatives players hold derivatives positions resulting in credit exposures of more than €900 billion, an amount more than twice their equity capital.²⁸⁾

27) Exposures from an OTC derivatives transaction can be broken down into two components: a) the current market value of the derivative, i.e. the amount that a counterparty would lose, if the other counterparty defaulted today, and b) an add-on for potential future exposure to capture the risk of market value fluctuations; all following estimates are based on BIS current exposure method; see BIS 1998; BIS 2005a; BIS 2005b; BIS 2009a, ISDA 2009a.
 28) Based on total equity as reported (including hybrid capital); aggregate numbers for JPMorgan Chase, Bank of America, Citibank, Goldman Sachs (see OCC 2009, annual reports).

Insufficient risk valuation and risk management capabilities

As revealed by the current crisis, OTC derivatives markets have yet another fundamental weakness: they lack sufficient capabilities for comprehensive risk assessment and management. For complex derivatives, the problem is twofold. First, many market participants lack the ability to adequately price and value derivatives and, in some cases, independent valuations by a third party are not available to support them. Second, after having exposed themselves to risks, many do not have sufficient capabilities to monitor and mitigate these risks effectively.²⁹⁾

As OTC derivatives are sometimes complex and frequently not traded openly, they are inherently difficult to price. In most cases, there are information asymmetries between broker-dealers that issue and trade derivatives and the end user. Historically, broker-dealers have therefore taken the lead on valuing these derivatives and providing prices to their counterparties. Clearly, this resulted in a conflict of interest, given that broker-dealers stood to gain or lose, depending on their pricing.³⁰⁾

Derivatives transactions require adequate risk management. While in the case of exchange-traded derivatives risk management capabilities are already institutionalized (e.g. via CCPs), this is not true for most of the OTC market. The crisis has demonstrated that many market participants are not equipped with suitable means for monitoring and controlling risks. The US insurance group AIG is but one example of how substantial derivatives risks can accumulate over time if internal supervision and controlling fail (see AIG case study in the box on p. 15).

Interconnectedness and complexity

While too high bilateral exposures and gaps in risk management can be a problem for individual participants already, the interconnectedness of derivatives market participants adds to that problem and can impact the market as a whole. Where the market is organized on the basis of bilateral counterparty relations, the failure of one single participant can pose a systemic risk to the market as a whole by destabilizing all its direct and indirect trading partners. A significant part of the OTC segment does not have any mechanisms that can absorb such a potential for domino effects.

Participants in the OTC derivatives market are highly interconnected with other market participants. At the time of its bankruptcy, Lehman Brothers' main European subsidiary had open derivatives positions with almost 22,000 counterparties.³¹⁾ AIG was involved in derivatives dealings with 1,500 counterparties before its bailout.³²⁾ For the largest broker-dealers, it is safe to assume that these figures are even higher. Should one of those large market participants fail, a vast number of parties would be affected, and a chain reaction of negative spillover effects may develop across many of its counterparties.³³⁾ If AIG had not been rescued, some of the largest global banks would have stood to lose sums of up to 30 percent of their equity capital.³⁴⁾

29) "[Among banks] there were also many cases where internal risk management was ineffective and where boards failed adequately to identify and constrain excessive risk taking", FSA 2009, p. 92.

30) See Wall Street & Technology 2008, Dow Jones 2008.

31) See Lehman Brothers International (Europe) – in Administration 2009.

32) See AIG 2009a.

33) In case of default, these entities would thus most likely have to be bailed out as they are "too big to fail", meaning that a bankruptcy would have dramatic consequences for the stability of the global financial system.

34) See AIG 2009b.

AIG case study³⁵⁾

- **AIG and derivatives:** AIG built up an OTC derivatives portfolio of more than €2.1 trillion through its subsidiary AIG Financial Products. Over the period 2003 to 2005 it became one of the largest providers of credit protection to other market participants through extensive dealings in CDS.
 - **AIG's demise:** As AIG incurred heavy losses in 2007, its rating was lowered in May 2008. Due to this decrease in creditworthiness, AIG had to post several billion dollars of additional collateral for its OTC derivatives transactions. When AIG faced further rating downgrades in September 2008 and could not afford any additional collateral calls, the Federal Reserve had to step in and rescue the company.
 - **Potential impact of a default of AIG on other derivatives market participants:** At the time of its bailout, AIG had OTC derivatives trades with around 1,500 counterparties (including institutional investors, corporates, a number of US and international state and local governments, and most of the largest global banks). Data on payments to AIG counterparties through the bailout reveals that banks stood to lose in some cases more than 30 percent of their equity capital had AIG defaulted – amounts that would have taken some of them to the brink of default. The lion's share of these potential losses would have been from OTC derivatives transactions.
-

Lack of transparency in selected market areas

The derivatives market is often described as being opaque.³⁶⁾ Especially in the case of bilaterally traded derivatives not cleared by CCPs, there is a lack of transparency on their pricing as well as their risk positions. These intransparencies have a destabilizing effect on the market because doubts regarding the creditworthiness of individual counterparties can create a crisis of confidence – a phenomenon broadly observed during the financial crisis when investors faced severe illiquidity in certain products.³⁷⁾ In addition, intransparencies make it extremely difficult for regulators and supervisors to assess risks on an aggregate level and respond accordingly. AIG, for example, managed to build up its CDS portfolio without supervisors noticing its level of risk exposure for a long time.

Both market complexity and insufficient reporting are drivers of intransparency. Bilateral trading implies a vast number of counterparty relations. At the time of its bankruptcy, Lehman Brothers held roughly 134,000 active OTC derivatives contracts.³⁸⁾ Likewise, AIG's outstanding derivatives trades numbered around 50,000.³⁹⁾ Without central counterparties, which effectively serve to disentangle these relations, it is nearly impossible to gain a realistic view on effective risk positions. In addition, large areas of the OTC market have no reporting requirements – and hence no post-trade transparency.⁴⁰⁾ In this respect, there are no market mechanisms which ensure timely, independent monitoring of the market and in particular the OTC segment.

35) See AIG 2009a, AIG 2009b, Clark 2009.

36) See FSA 2009, IOSCO 2009.

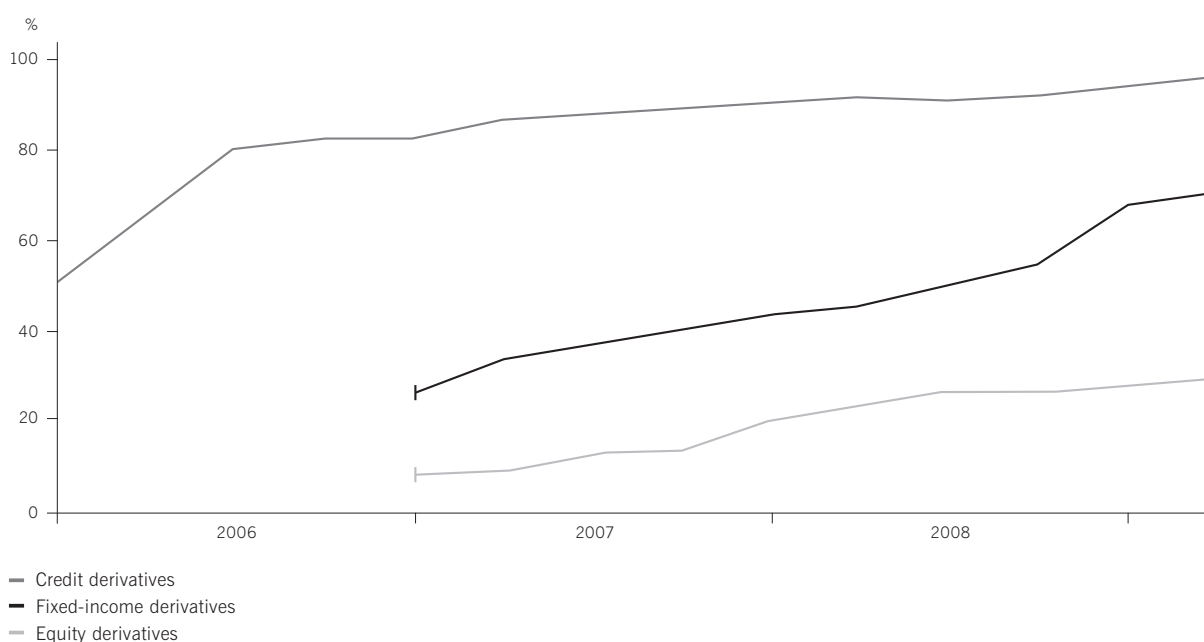
37) While structured credit-linked securities and other ABS are often cited as examples for market illiquidity in the crisis, this has also been the case for parts of the OTC derivatives segment; see Wall Street & Technology 2008.

38) See Lehman Brothers International (Europe) – in Administration 2009.

39) See AIG 2009a.

40) Currently, only the BIS statistics provide a comprehensive overview of the market, which is based on a voluntary quarterly survey among market participants.

Exhibit 6: Automation levels – share of electronically confirmed OTC derivatives transactions



Source: Markit

Operational inefficiencies and limited legal certainty

Two further aspects have unnecessarily contributed to the risk of OTC derivatives: operational inefficiencies and legal uncertainty. The former is mostly driven by a lack of standardization and automation in existing products and workflow processes. The latter is primarily due to the unregulated nature and bilateral relationships inherent in OTC derivatives contracts.

Frequently, OTC derivatives are handled manually, which can result in costly delays and potential errors. Confirmations that are inaccurate and untimely can cause disputes, and market participants run the risk of not having an up-to-date and accurate view of their risk positions. Backlogs in trade processing leapt to alarming levels as early as at the onset of the financial crisis in 2007.⁴¹⁾ While the OTC derivatives industry has tackled many operational issues, there

is still more room for improvement. In particular, standardization/automation levels – at 30 percent for equity and 70 percent for fixed-income derivatives – are still low (Exhibit 6).⁴²⁾

Stand-alone bilateral contracts are inevitably accompanied by legal uncertainty. The main risk is that counterparties cannot legally enforce their claims. In the course of the crisis so far, disputes over the interpretation of certain clauses, such as the validity of collateral agreements⁴³⁾, have risen dramatically despite the use of so-called “master agreements” for OTC transactions.

41) “In July and August 2007, a spike in credit derivatives trades resulted in substantial increases in backlogs of unconfirmed trades throughout the industry”, IOSCO 2009, p. 29; see also Tumpel-Gugereil 2009.

42) See Markit 2009.

43) See Sutherland 2009.

3 Blueprint for Market Safety and Integrity

To create a well-functioning market that delivers maximum benefits to its participants and the economy as a whole, safety and integrity as well as an efficient and innovative derivatives market need to be ensured (3.1). To achieve this, a strengthened market structure should be found – the derivatives market blueprint (3.2). Standardization of derivatives contracts and the respective processes is key to establishing safety and integrity in all areas of the derivatives market (3.3).

3.1 Imperatives for a well-functioning derivatives market

Regulatory discussions in the past have been centered around efficiency and innovation, since safety and integrity of the market were often considered as being given. However, the financial crisis has shown that first and foremost, safety and integrity of derivatives trading and clearing need to be ensured, since the default of even one market participant can destabilize the entire financial system.⁴⁴⁾ This systemic risk can trigger a chain reaction or domino effect – when the failure of one market participant has an adverse effect on other market participants – and must be mitigated to contain possible negative effects.

Safety

Within a safe derivatives market, financial intermediaries are capable of withstanding shocks and/or the potential failure of systemically relevant institutions.⁴⁵⁾ In this way, unwanted risks – those not intended by investors' hedging or investment strategies – must be kept to a minimum and must be effectively managed. Moreover, safety measures must be established to absorb unexpected risks and prevent market participants from assuming excessive exposures.⁴⁶⁾ Market mechanisms and infrastructures have to be in place to reduce unwanted counterparty, operational, legal and liquidity risks.

Unwanted risks versus market safety⁴⁷⁾

To create a safe market, the different types of risk within the derivatives market need to be considered: “wanted” and “unwanted” risks. Wanted risks are the main reason for using derivatives to achieve a desired exposure – addressing the market risk that either could compensate an opposite risk (hedging) or that investors want to benefit from (investment). However, derivatives are also associated with unwanted risks which investors and market regulators seek to avoid:

- **Counterparty risk:** Describes the risk that a counterparty to a derivatives contract defaults and cannot (completely) fulfill its contractual obligation. The safety of the market is harmed if a default of one market participant triggers a chain of defaults.
- **Operational risk:** Encompasses failures in the operational processing, e.g. trading, clearing, settlement and controlling failures. Market safety is at risk if there are operational breakdowns within the organization of relevant market participants or infrastructure providers.
- **Legal risk:** Includes the risk arising from unenforceable contracts or non-compliance with laws, rules and regulations. Market safety could be affected in the case of legal uncertainty with regard to widely used derivatives products.
- **Liquidity risk:** Specifies the risk that a derivative cannot be sold for its fair value since there is no demand for that derivative at this fair value. Market safety is at risk if relevant market participants default as they are unable to dispose of their derivatives positions.

⁴⁴⁾ See Geithner 2008.

⁴⁵⁾ See ECB 2008b.

⁴⁶⁾ See Bernanke 2008.

⁴⁷⁾ For an example-based explanation of these risk categories see Deutsche Börse Group 2008.

The most common methods of mitigating **counterparty risk** are netting and collateralization of counterparty risk exposure.⁴⁸⁾ Infrastructure providers such as CCPs facilitate multilateral netting across all trading parties. As a neutral function within the derivatives market, these CCPs assume the tasks of mitigating and managing the counterparty risk throughout the derivative's life cycle. In the case of a default, they financially secure payments as they close out open risk positions and draw on the collateral posted by the defaulting clearing member. If this collateral is not sufficient, CCPs can subsequently also draw on additional "lines of defense", e.g. funds, reserves or equity capital.

The **operational risk** that is often inherent in manual processing and interferences in trading and clearing processes can be mitigated using reliable electronic processing and automated interfaces. As external shocks cannot be entirely avoided (e.g. natural catastrophes, terrorist attacks), it is recommended that backup systems are in place in case of an operational breakdown.⁴⁹⁾ These backup systems should be regularly tested.

Legal risk can be reduced by using commonly accepted derivatives contracts and agreements with standardized clauses on maturities, coupons, settlement and netting rules, as well as one chosen and recognized jurisdiction.

Illiquidity is mostly a problem within a non-transparent, non-standardized, and non-regulated market structure, since only a limited number of potential parties are trading privately. Thus, **liquidity risk** can be reduced with an organized market model in which trading interests are consolidated. Furthermore, precautions should be taken to avoid illiquidity in the event of systemically relevant institutions experiencing shocks or defaults.⁵⁰⁾

Integrity

Fair trading – that is, transactions free from fraud or price manipulation – is key to market integrity. Information asymmetries are reduced, and the product's market price is a result of available public information and future price expectations. Integrity and safety are closely linked, given that market participants need to safeguard their books from manipulation – both internally and externally.

Market integrity must be backed by market transparency, i.e. the availability of relevant market data to market participants and supervisors, such as trading volumes, prices and open risk positions. To secure the accuracy of market information, neutral institutions – independent of trading participants and thus without any interest in overstating or manipulating information – should be installed within the market structure. Ideally, these institutions should not only gather and aggregate data (e.g. trade repositories), but also assess risk positions (e.g. CCPs) or organize price formation (e.g. regulated markets) neutrally. In addition, supervisors should be able to effectively assess the information flow within the market on the one hand, and the integrity of each market participant on the other.⁵¹⁾

In the case of fraud or manipulation, market participants lose confidence in the orderly functioning of the market and the value of traded assets. A negative spiral of price deterioration could emerge in the worst case. Thus, precautionary measures should already be specified to preclude fraud and manipulation (e.g. intervention rights).⁵²⁾

48) See Bliss/Kaufman 2006.

49) See BIS 2007.

50) See Basel Committee on Banking Supervision 2008.

51) See Allen/Carletti 2008.

52) See Wellink 2008.

Efficiency

An efficient financial market is one in which asset prices consistently reflect all available information and expectations (price efficiency), and in which products and services are provided at the lowest transaction costs (cost efficiency).⁵³⁾

Price efficiency refers to the quality of price discovery within the market; derivatives prices should fully reflect the investor's beliefs with respect to future prices and the amount of information available to all market participants. Ideally, asset prices should adjust instantaneously to reflect new information. Thus, the main driver of price efficiency is equal access to available information. Market infrastructure providers such as exchanges, CCPs or trade repositories help create transparency by gathering and aggregating data, e.g. trading volumes or prices. Exchanges provide equal access to a public marketplace by creating a level playing field to contribute and execute trading interests. However, only in a liquid market is continuous trading and pricing possible.⁵⁴⁾ As liquidity is a question of a sufficient number of market participants being willing to trade, organized market venues are well positioned to sustain minimum levels of liquidity.

Cost efficiency can be improved by realizing economies of scale and reducing handling costs. If more volume is traded through one system, fixed costs per trade will be reduced – be it through a trading, clearing or settlement system. Handling costs can be minimized if traded products are processed automatically throughout the value chain. Therefore, standardization is an important precondition for efficiency.

Innovation

In an efficient derivatives market, price and cost efficiency are enabled through product and technological innovations.⁵⁵⁾ Indeed, the major driver behind innovation is competition, as every new product or technological innovation is an opportunity for

financial intermediaries to compete for new trading volumes and revenue opportunities. As most innovations in the financial sector are not eligible for intellectual property protection, market participants must constantly innovate to maintain their market leadership.⁵⁶⁾

Initially, product innovations are usually introduced within unregulated markets. Here, the flexible regulatory environment provides favourable conditions for product innovations.⁵⁷⁾

Summary

First and foremost, safety and integrity of derivatives trading and clearing are indispensable for a well-functioning derivatives market. To ensure safety and integrity several conditions need to be met:

- Open market exposures should always be collateralized in order to reduce counterparty risk.
- Risk taking of market participants that exceeds the individual risk tolerance (i.e. is excessive) has to be avoided.
- Independent institutions should manage and control risk on a continuous basis.
- Transparency as a basis for integrity of trading and effective supervision has to be ensured.
- Market complexity should be reduced to a manageable degree.

Standardization and automation of products and processes are key drivers in establishing efficient and innovative markets. Transparency and liquidity can best be achieved by trading in organized markets.

53) See Shefrin/Statman 1993.

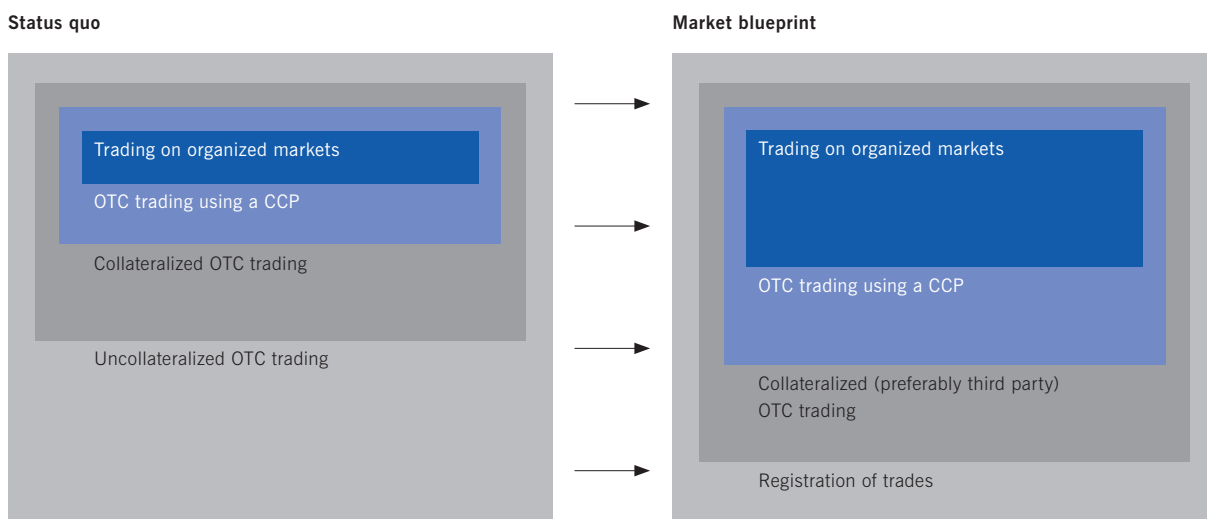
54) See FSA 2009.

55) See for instance Merton 1995.

56) See Schroth/Herrera 2003.

57) See Larosière 2009.

Exhibit 7: Derivatives market – shift of status quo towards market blueprint



Box size represents the notional amount outstanding

3.2 Guidelines for a market blueprint

Structural deficiencies in the OTC market revealed by the financial crisis should be addressed by reforming the current market structure. Yet this cannot be achieved merely by intensifying regulatory and supervisory requirements. When defining guidelines for a market blueprint, the ultimate objective must be to both sustain the stability of the financial system and minimize the possibility of a systemic crisis.

Thus, guidelines for any market blueprint should fulfill two conditions. First, they need to address the existing deficiencies in the derivatives market (almost exclusively present in the OTC segment). Second, they should also fulfill the imperatives for a well-functioning derivatives market.

The blueprint for the derivatives market specifically aims at (Exhibit 7):

- Maximum use of derivatives trading on organized markets
- Maximum use of CCPs where trading on organized markets is not feasible
- Bilateral collateralization of derivatives exposure (preferably handled by a third party) where organized trading or use of CCPs is not suitable
- Mandatory registration of open risk positions and reporting standards for all derivative contracts

The blueprint provides four guidelines in descending order of preference. In such a structure trading on organized markets (which incorporates clearing by a CCP) is the best. Consequently, OTC trading via CCPs as well as collateralized OTC trading constitute the next best solutions respectively.⁵⁸⁾ Nevertheless the guidelines do not aim at prohibiting any of the current segments of OTC derivatives trading and clearing. The blueprint, furthermore, preserves market choice to trade bilateral and even uncollateralized derivatives contracts because these segments can enable market participants who use derivatives only occasionally – and who might not yet have the means to post collateral – to still benefit from hedging or investment strategies (see chapter 2.1.2).

3.2.1 Maximum use of derivatives trading on organized markets

A first step towards the market blueprint is transferring OTC-traded yet standardizable derivatives contracts into organized and in particular onto regulated markets, i.e. exchanges. The trading of derivatives on organized markets has three main benefits: enhanced transparency, neutral and transparent price discovery, and increased market liquidity.

Enhanced transparency

One of the main shortcomings of the derivatives market is the lack of transparency in the OTC segment (see chapter 2.2.2). By contrast, derivatives traded on regulated markets are automatically registered with electronic trade execution systems providing full post-trade transparency. Here, volume and price information, as well as the time at which these transactions are entered into can thus easily be made public in real-time. Such data, which is equally accessible to other market participants and supervisors, gives a clear overview of the pricing of derivatives and the risk positions taken by individual market participants.

Neutral and transparent price discovery

Unlike trading in the OTC segment, a regulated market with its neutral and transparent price formation (pre-trade transparency), allows all market participants to be involved in the process of price discovery. Ensuring that up-to-date price quotes and the bid-ask spread are available and accessible to all counterparties (in contrast to the OTC segment, where in many cases only the dealer who originates the customized OTC derivative generates price points, if at all) serves to enhance the efficiency and integrity of trading.

Increased market liquidity

In addition, trading more derivatives on regulated markets would increase market liquidity, i.e. the ability to trade derivatives without causing a significant movement in the price and with a minimum loss of value. Supervised markets provide the infrastructure for unrestricted market access and market information, anonymity to traders, and swift order execution.⁵⁹⁾ Even at the peak of the financial crisis exchange trading was fully available, enabling market participants to adjust their market exposure to changing economic conditions and thus maintain financial stability by preventing systemic risk.

⁵⁸⁾ This guideline is in line with the recommendations of the US administration (US Department of the Treasury 2009) and the EU Commission (Commission of the European Communities 2009a).

⁵⁹⁾ See US Department of the Treasury 2009.

3.2.2 Maximum use of CCPs where trading on organized markets is not feasible

Moving derivatives from bilateral clearing to clearing via a CCP is the most effective way of reducing the systemic risk inherent in the OTC segment. The main advantages of CCPs are:

- Mitigation and management of counterparty risk
- Reduction of information asymmetries
- Reduction of complexity and increase in efficiency

CCPs facilitate mitigation and management of counterparty risk

The build-up of bilateral counterparty risk in the OTC segment is the most critical weakness that needs to be addressed in a market blueprint. As the examples of Lehman and AIG have shown, the risk of a counterparty failing is far from theoretical. Thus, existing CCP risk management capacities for mitigating and managing counterparty risk are essential contributions to the safety of the market (Exhibit 8). In the

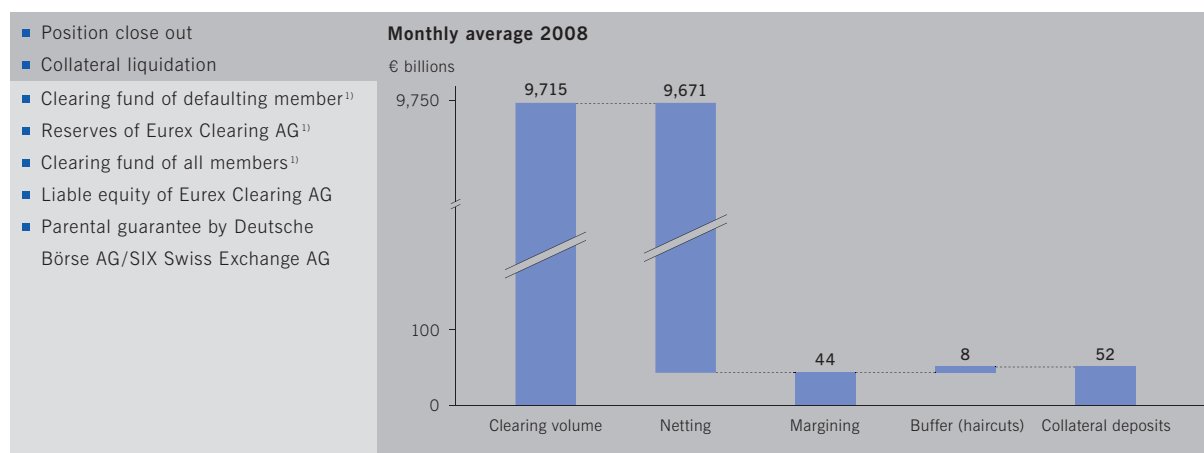
first place, CCPs reduce the probability of a market participant defaulting. Secondly, they manage and minimize the implications of a possible default.

Mitigation of counterparty risk is achieved by contract novation, i.e. the process through which a CCP acts as a buyer to all sellers, and vice versa. The CCP thereby assumes the counterparty risk of all trading parties and ensures collateralization. Following novation, which is usually handled automatically, the CCP is the universal counterparty to all contracts. Practically, each market participant only needs to be concerned with the counterparty risk of the CCP. Given that the CCP is well protected against default by the full collateralization of open risk positions, by its ability to close out positions and by its several lines of defense, complexity in counterparty relations and monitoring costs are substantially reduced.⁶⁰⁾

60) See Bliss/Papathanassiou 2006.

Exhibit 8: CCP risk management and mitigation – Eurex Clearing example

Lines of defense

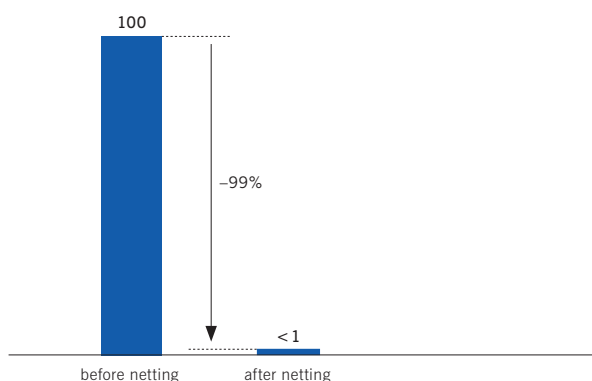


1) Every clearing member is required to contribute to the clearing fund. In case of default, collateral will be liquidated first, then the contribution to the fund by the clearing member in question will be utilized. If the contribution of the defaulting clearing member and the accrued reserves of Eurex Clearing AG are not sufficient, the contributions of all other clearing members will be utilized proportionally.

Source: Eurex

Exhibit 9a: Netting efficiency – multilateral (CCP) netting

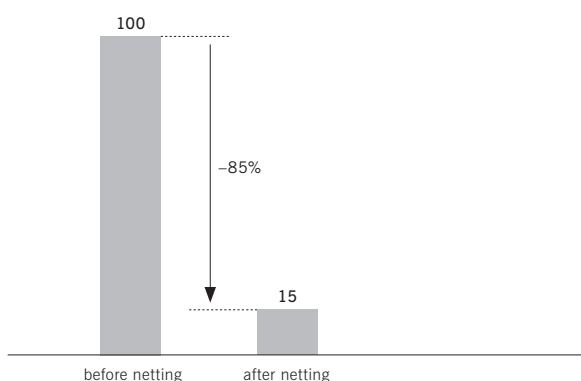
Exposure before netting = 100
Multilateral (CCP) netting in an on-exchange market¹⁾



1) Eurex Clearing example
 Source: Eurex, BIS

Exhibit 9b: Netting efficiency – bilateral netting

Exposure before netting = 100
Bilateral netting in an OTC market²⁾



2) Netting efficiency calculated as gross credit exposure/gross market value, including both netting and offsetting of netted positions under legally enforceable bilateral netting agreements
 Source: Eurex, BIS

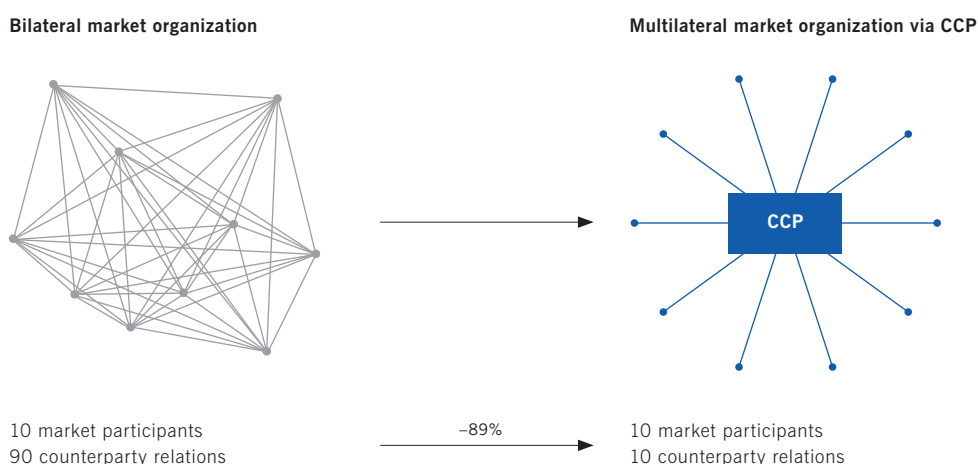
During risk management and following novation, the CCP nets all offsetting open derivatives contracts of each trading party across all other trading parties. Such multilateral netting decreases the gross risk exposure – to a much higher degree than in the OTC segment which utilizes only bilateral netting (Exhibit 9a and 9b).⁶¹⁾

The CCP’s counterparty own risk is reduced to almost zero and is manageable by means of margin and capital deposits designed to prevent damages which arise as a result of one member’s default burdening the CCP. The CCP therefore closely regulates and monitors admission to central clearing on an ongoing basis. All clearing members require a clearing license, which is only issued and upheld if certain prerequisites are fulfilled (e.g. minimum liable equity capital, compliance with technical specifications to ensure that transactions are properly recorded, booked and monitored).⁶²⁾ Thereby the CCP sets minimum quality standards for its members and regularly monitors the solvency and capabilities of its members.

Once they are accepted, clearing members have to provide a collateral deposit as part of the standard requirements for membership. Not only do changing market conditions and prices fluctuate, but also the value of derivatives contracts. The CCP calculates the change in value of the positions of its members at the very minimum on a daily basis – sometimes even intraday. Should losses be incurred, the respective members must post additional collateral. Generally, CCPs set their margin requirements at levels that are expected to cover one day’s market move.⁶³⁾

61) Multilateral netting through CCPs or multilateral trade compression is not widely used in the OTC segment. CCP-cleared transactions only account for a fraction of OTC trades (less than 25 percent of notional outstanding, see chapter 2.1.1). Trade compression initiatives have only gained momentum since 2008 in the credit derivatives segment, which accounts for only 8 percent of the market.
 62) For example, the minimum liable equity capital for the applying institution for the Eurex CCP is determined by Eurex Clearing AG on a dynamic basis and is currently (as of June 2009) at €125 million.
 63) See for instance the Clearing Conditions of Eurex Clearing AG.

Exhibit 10: Counterparty relations – complexity reduction through CCP clearing



Hence, a CCP is in a better position than any counterparty of a bilateral transaction to absorb the failure of a clearing member. By specifying the requirements for clearing members' margining and collateral, CCPs are able to reduce the risk of a failing member affecting others. Eventually, all clearing members form an insurance pool, which facilitates the mutualization of potential losses.⁶⁴⁾

CCPs address information asymmetry problems
 Participants in a bilaterally cleared market are not able to gain a full picture of their counterparties' risks, since their knowledge is limited to their own positions vis-à-vis their counterparties. Understandably, the effects of this uncertainty on market confidence can be devastating. By contrast, CCPs are uniquely poised to swiftly understand the positions of all market participants and are in a strong position for managing risks for a clearing member in distress. This may necessitate increasing collateral and – if needed – unwinding open positions. The well-established CCP processes for unwinding the positions of an insolvent member further foster market confidence.⁶⁵⁾

CCPs reduce complexity and increase efficiency
 A CCP reduces complexity by reducing the number of counterparty relations (Exhibit 10) and increases efficiency by establishing the margin and collateral requirements for its members, centralizing the necessary calculations, automatically collecting or paying the respective amounts and preventing disputes (e.g. over the amount and quality of collateral). CCPs address operational risks by means of adequate auditing procedures (i.e. compliance with technical infrastructure requirements) that ensure the necessary operational know-how of their current and potential members.

64) See Bliss/Papathanassiou 2006.
 65) See Commission of the European Communities 2009b.

Using CCPs for OTC derivatives actually requires less regulatory capital from clearing members because CCPs – due to their capacity to mutualize losses – are considered zero-risk counterparties. Analyses suggest a cost advantage of approximately 28 percent (Exhibit 11) because there are no equity capital costs. On the other hand, higher collateral costs result from the precautionary measures taken by CCPs – such as higher quality requirements for collateral and overcollateralization. These are offset by equity capital savings, thereby improving liquidity for clearing members.

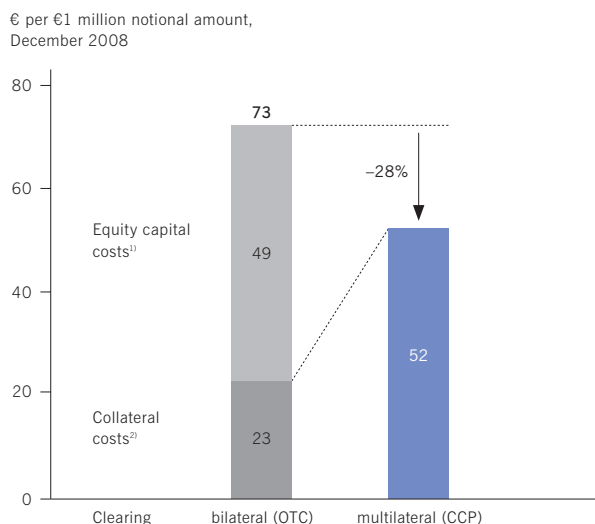
Likewise, the CCP can structure its rules and mechanisms under a single jurisdiction to avoid legal conflicts and disputes over rights and obligations under the derivatives contracts or the relevant master agreement respectively.

3.2.3 Collateralization of bilateral exposures, ideally by third-party collateral managers

Some derivatives contracts might not be eligible for clearing by CCPs (for example, if the product is not sufficiently standardized), or market participants might deliberately choose not to use a CCP. The blueprint enables such products to remain in the OTC segment for bilateral trading and clearing. In the current market structure, roughly one-third of the OTC derivatives transactions are uncollateralized, leaving the risk of counterparty default virtually unsecured (see chapter 2.2.2). Fully collateralizing the derivative contracts within the life cycle of bilateral transactions minimizes the counterparty risk and should therefore be the norm.⁶⁶⁾

Meanwhile, the remaining two-thirds of the OTC derivatives transactions are collateralized, according to the industry, primarily in cash (83 percent).⁶⁷⁾ In contrast to CCP-cleared transactions, there are no consistent standards or minimum requirements in OTC trading. Collateralization can effectively mitigate counterparty risk. However, it does raise second-order risks, such as liquidity risks (e.g. insufficient haircuts for collateral posted), legal risks (e.g. conflicting governing laws, inappropriate right of pledge on collateral in the event of default), custody risks (e.g. lack of variety of collateral) and operational risks (e.g. lack of automated processes) that require effective management if the benefits from collateralization are to be realized.⁶⁸⁾

Exhibit 11: Equity capital and collateral costs within OTC and CCP-cleared markets



66) See FSA 2009.
 67) See ISDA 2009a.
 68) See BIS 2007.

1) Assuming 14.8 percent required return on equity (estimated sustainable ROE for global top 15 corporate and investment banks)
 2) Based on 70 basis points spread between cost of unsecured funding (Euribor 12 months) and cost of secured funding (Eurepo 12 months); assuming 50 percent rehypothecation with regard to OTC collaterals
 Source: BIS, ISDA, Eurex Clearing, LCH.Clearnet, CME Clearing and OCC annual reports, as well as own analysis

When dealing with collateral, a third-party manager with no institutional interest whatsoever in the origination and trading of derivatives can introduce neutral, independent risk valuation and management to the OTC derivatives market. An independent third party is generally better positioned than any of the counterparties to calculate the exposures of the trading parties involved from a neutral position. Likewise, such a setup would solve inherent conflicts of interest in cases where the dealer counterparty is the sole valuation agent.⁶⁹⁾ Using standardized rules and references to assess the eligibility and quality of pledged collateral serves to limit disputes between counterparties. Professional collateral managers can also entail lower collateral transaction costs emerging from economies of scale in handling, safeguarding, and monitoring collateral.

3.2.4 Mandatory registration for all derivative contracts

Data fragmentation in the financial industry seriously impedes the ability to protect the stability and integrity of the financial system as a whole. Therefore the blueprint provides for a centralized repository in which information on trades is registered and to which relevant authorities have unrestrained access for the purpose of monitoring both trades and open interest in this market.⁷⁰⁾

Registering data – especially outstanding risk positions – for all trades (both CCP-eligible and non-CCP-eligible) would serve to improve transparency for supervisors and to a more limited extent for market participants.⁷¹⁾ Furthermore, it provides the ability to identify the obligations of trading parties, which can accelerate resolution of these positions in the event of a default.

CCPs and trade repositories are positioned to provide the relevant supervising institutions with a comprehensive picture of activities in the OTC derivatives market. They are therefore a prerequisite for effective supervision of the derivatives market. Supervisors in turn will be able to detect forms of market abuse such as fraud or market manipulation that affect price discovery on organized markets.⁷²⁾

In addition to providing supervisors with data on any individual counterparty's trades and positions, trade repositories should make aggregate data on open risk positions and trading volumes available to the public.⁷³⁾

The CDS market demonstrates the operational benefits of a central data repository. In 2003, only 15 percent of the CDS trades were tracked electronically. In effect, the bulk of the processes were handled manually and, thus, prone to error. To counter this, an automated matching and confirmation system was implemented in 2005. It led to 95 percent of all OTC credit derivatives being processed automatically – an average of 41,000 transactions per day.⁷⁴⁾ Setting the standard targets for electronic registration is a first step towards standardizing derivatives contracts. Due to nascent efforts in the CDS market, here the prerequisites for CCP clearing have already been introduced.

69) Under the ISDA master agreement, one party to the contract can act as the sole valuation agent thereby controlling and conducting the mark-to-market valuation of the derivative contract in question.

70) In Brazil, the competent regulatory authority CVM requires OTC derivatives to be registered at infrastructures like CETIP and BM&F Bovespa.

71) See US Department of the Treasury 2009.

72) See Commission of the European Communities 2009a.

73) For example, following the meltdown of Lehman in September 2008, DTCC published information on Lehman's CDS exposure based on their records, thereby dampening the effects of widespread speculation (see chapter 2.2.1).

74) See Thompson 2009. The automation service was set up by DTCC after the Federal Reserve Bank of New York demanded the commitment of the major OTC dealers to improve CDS industry practices and confirmation backlogs by setting target dates and levels for the reduction of outstanding trade confirmations.

Summary

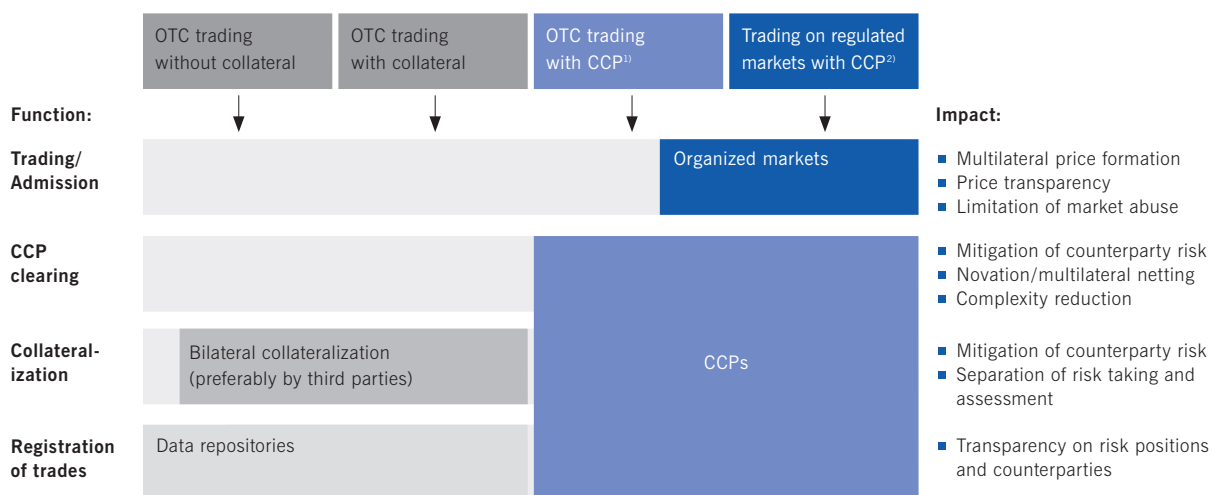
The four elements of the blueprint have the ultimate goal of ensuring market safety and integrity for the derivatives market. While market choice among the existing segments of the derivatives market is preserved, the blueprint clearly aims at shifting bilateral and uncollateralized transactions towards organized and particularly regulated markets and CCP clearing for the purpose of reducing systemic risk in the derivatives market (Exhibit 12):

- Effective risk management and increasing transparency is at the heart of the blueprint. Therefore, shifting standardizable derivatives to organized and particularly regulated markets is the preferred solution. In addition to incorporating the benefits of CCP clearing (e.g. reduction of counterparty risk combined with neutral risk management

capabilities), organized markets provide transparency concerning transactions, prices and risk positions – all of which foster safety and integrity of the derivatives market.

- The key element to reducing systemic risk in the OTC segment is shifting as many derivatives contracts as possible to CCP clearing. To further fundamentally reduce counterparty risks, all non-CCP-cleared derivatives positions should be collateralized. To capture the full benefits, an independent manager should control and manage the collateral.
- Finally, mandatory registration of all derivatives contracts in a central data repository would enable supervisors to assess risks in the market and act before participants establish excessive risk positions and thus put market safety in peril.

Exhibit 12: Market blueprint – key elements provide safety and integrity of the derivatives market



1) Comprises multilateral and bilateral trading
 2) Always multilateral trading

3.3 Standardization as a main enabler

Standardizing derivatives contracts and related processes is key to increasing safety and integrity of the derivatives market.⁷⁵⁾ Standardization should be seen as a continuous effort to enable the implementation of all four elements of the market blueprint:

- **Registration:** Standardization is needed to register trades in a data repository containing the primary electronic record for each registered derivatives contract.
- **Collateralization:** Common contract standards on collateral and process standards are required to enable collateralization and the use of third-party collateral managers.
- **Use of CCPs:** Standardization of the main contract parameters is a prerequisite to centrally processing and applying CCP risk models.
- **Trading on organized markets:** A derivatives contract eligible for trading on organized markets needs a high level of standardization.

To date, standardization efforts have often been led by industry associations, e.g. ISDA. These efforts resulted in diverging levels of standardization across various OTC derivatives types. Whereas interest rate swaps are generally highly standardized, some equity derivatives lack even the most basic level of standardization.⁷⁶⁾

Steps for the standardization of the CDS index market

- **2003 ISDA Credit Derivatives Definitions Guide:** Definition and documentation issues, for example, “What constitutes a credit event?” were solved by the introduction of standardized ISDA documentation.
 - **2004 Introduction of CDS Indices:** The introduction of the iTraxx® index family provided for the standardization of maturity dates and fixed coupons for derivatives contracts based on the index family.
 - **2005 First credit event auction and automated confirmation system:** In order to facilitate cash settlements of the open positions in case of a credit event, auctions were introduced for the defaulted assets. In addition, an automated matching and confirmation system for OTC-traded CDS was established.
 - **2007 Launch of the first exchange-traded credit derivatives contract:** Eurex launched a future based on the iTraxx Europe five-year index series on 27 March 2007. The cash-settled contract is standardized with respect to coupons, maturity dates, volume (€100,000), tick size and quotation.
 - **2009 Implementation of central clearing for CDS:** On 17 February 2009, nine major industry players signed a self-commitment with the European Commission to migrate the European CDS market on central clearing by 31 July 2009.
-

⁷⁵⁾ See Commission of the European Communities 2009a.

⁷⁶⁾ For a comprehensive overview of the standardization level, see Commission of the European Communities 2009b, for instance.

In order to accelerate standardization a certain share of derivatives should be traded via standardized contracts – with target levels, timeline and asset classes of derivatives to be defined by the regulator. Since standardization is difficult to measure, targets could be set – for example, with regard to the automation level.⁷⁷⁾ The industry as a whole and infrastructure providers would then have to meet such targets. To supplement the industry effort a committee – chaired by a senior supervisor – should be established. The committee would develop legally binding standards to be incorporated in the new framework agreements, e.g. obligatory collateralization of open positions, duty to register the contracts, and monitoring the progress of standardization.

In case the predefined target levels are not met, alternative regulatory incentives – which should be defined in parallel to the above mentioned effort – need to be used. Enhanced capital requirements and disclosure requirements (e.g. on derivatives transaction pricing) for OTC-traded products are two examples of such incentives.

77) This compares to ongoing industry initiatives to increase standardization and automation in selected OTC derivatives segments facilitated by the Federal Reserve Bank of New York, see NY Fed 2009.

4 Roadmap for Implementation

Improving derivatives market safety and integrity calls for a swift and consistent implementation of the blueprint. This chapter proposes implementation measures for each blueprint layer (4.1) and describes the contributions of public bodies and the derivatives industry required for implementation (4.2).

4.1 Implementation measures for a safer derivatives market

The implementation of the different layers of the blueprint requires clear guidelines. These should govern the activities of institutions that provide critical functions within the blueprint (e.g. central data repositories, third-party collateral managers, CCPs, organized markets).

The guidelines for implementation should be established on certain principles:

- **Market-driven solutions:** In general, market-driven solutions (e.g. the provision of CCP clearing by competing firms) are preferable as a default option. Competition between infrastructure providers will ensure choice for market participants and promote innovation. Obviously, competition among infrastructure providers can only work well if the services and functions are organized by the private sector.
- **Neutrality:** Providers of critical functions in the derivatives market should be neutral and independent. This is particularly important for risk management, which needs to be independent from risk taking to avoid conflicts of interest and to ensure safety and integrity.

- **European solutions:** The derivatives market is a global market. However, many jurisdictions and regulatory regimes still lack this attribute. Consequently, Europe should be independent, in other words, European market infrastructure should be located, operated and regulated in Europe. This would increase legal and regulatory certainty for European market participants.⁷⁸⁾

Self-regulation can support the implementation of the blueprint; however, a credible statutory approach would need to be a fallback option. Regulators and the industry may opt for a phased approach, i.e. first implementing the blueprint for derivatives contracts in certain asset classes (e.g. prioritized by their relevance for systemic risk).

4.1.1 Establishing central data repositories

The first step in implementing the blueprint entails establishing data repositories to ensure a clear and comprehensive overview of that part of the OTC derivatives market that is not CCP-cleared. Data repositories should serve as a central infrastructure for registration and reporting and thus provide transparency on risk positions and trades wherever these functions are not provided by CCPs. For this reason, registration of contracts should be mandatory.

Data repositories are currently only present in a small segment of the derivatives market – namely CDS – and their use for regulatory reporting is relatively new. Standards for the scope, format, and frequency of data to be reported need to be defined together with regulators and supervisors. International cooperation would guarantee a consistent view on the global derivatives market. At the same time, clear business rules enacted through statutory approval and with appropriate supervision would ensure the reliability, timeliness, and confidentiality of reporting.

78) See Hrovatin/Levin/Nava/Planta 2009, ECB 2008b.

Policy-makers should ensure the institutional independence of providers of data repository services. Integrated solutions across data repositories, CCPs, and potentially derivatives marketplaces would minimize operational risk and increase efficiency.⁷⁹⁾ In light of the central role of data repositories in the derivatives market structure, however, a European solution seems advisable.⁸⁰⁾

Mandatory registration requires that failure to comply will be sanctioned. For example, a substantial fine – e.g. a percentage of the notional amount – could be imposed for any derivatives contract that has not been registered by the contract parties within a defined period after the transaction.

4.1.2 Promoting collateralization of bilateral exposures (preferably through third parties)

In areas of the blueprint not covered by CCPs, collateralization is still necessary to mitigate credit risks. Neutral third-party collateral managers can play a strong role in ensuring appropriate collateralization, while also improving the efficiency of the collateral management process.

Standards for collateralizing OTC derivatives already exist.⁸¹⁾ The financial crisis and in particular the default of Lehman⁸²⁾ have shown, however, that these standards are not sufficient as the number of collateral disputes has increased significantly. A tightening of standards supported by statutory rules should be considered (e.g. with respect to eligibility, the valuation of exposures and collateral, as well as the reuse of collateral).

Providers of collateral management should ideally be neutral and independent of any risk-taking activities.⁸³⁾ It follows that a provider's systemic relevance increases in line with the volume of collateral under management. Consequently, both European market participants and regulators should ensure that such providers operate under EU jurisdiction and appropriate European supervision.

Regulatory incentives for collateralization are already in place.⁸⁴⁾ Stricter capital requirements would certainly increase the use of collateralization among banks and the use of third-party collateral management.⁸⁵⁾ However, most non-bank derivatives players today fall outside the scope of capital requirements, and incentives therefore need to be devised for these players in a similar way.⁸⁶⁾

4.1.3 Increasing use of CCP clearing

The pivotal role of CCPs in the market blueprint requires a careful assessment of potential implementation options.

Market participants are already incentivized to use CCP clearing: it reduces their counterparty risk and allows regulatory capital savings.⁸⁷⁾ However, bilateral clearing still seems to be economically more attractive.⁸⁸⁾ To this end, additional regulatory measures are inevitable to promote CCP clearing.

79) For example, DTCC – a trade repository for credit derivatives – is currently expanding its functions across the derivatives value chain (“We are taking a major step forward in addressing the calls from global regulators and customers for a fully integrated system for processing OTC derivatives”, see DTCC 2008).

80) The CESR is already preparing a feasibility study in this context, see Commission of the European Communities 2009a.

81) See ISDA 2005.

82) See chapter 2.2.1.

83) For example, collateral managers should not have an incentive to lower collateral standards due to economic considerations. Independence would additionally improve the safety of the collateral management function as the collateral placed with a third party is effectively protected in case of default of the receiving counterparty. This is especially important for buy-side market participants.

84) Collateralization of exposures reduces banks' capital requirements for counterparty risk; see BIS 1998, 2005a, 2005b.

85) For example, haircuts for collateral quality (or the collateral management process) could be altered to reflect the contribution to safety of third-party collateral management.

86) Some market participants, however, cannot afford to fully collateralize their exposures (e.g. small and mid-cap corporate clients). Statutory rules should ensure that there is no undue burden on them.

87) See chapter 3.2.2.

88) This could partly be driven by the fact that some market participants generate significant revenues from the OTC segment.

Following the call of the EU Commission to mitigate the systemic risk associated with credit derivatives, infrastructure providers have announced CCP offerings to clear CDS derivatives.⁸⁹⁾ Expanding this approach to other asset classes would be a first step. Here, defining target quotas for CCP clearing of certain derivatives types could be the right tool. Other regulatory incentives (e.g. higher capital requirements for bilaterally cleared derivatives) could be used to support the move towards strengthened risk management capabilities by means of CCP clearing.

While a CCP effectively mitigates and manages counterparty risk, it also consolidates counterparty risk within the derivatives market at a single point. Thus, regulators need to ensure that effective supervision and crisis management mechanisms continue to be in place for CCPs. Because of its global nature, the derivatives market runs the risk of regulatory arbitrage with CCPs competing based on their risk management and margining approaches. Therefore, regulatory efforts are needed to ensure a level playing field among CCPs and to avoid detrimental effects on the integrity of the clearing house and the cleared markets.

Since the role of a CCP is to serve as a safety net, the institutional independence of any CCP in the blueprint must be guaranteed. It is especially important for CCP functions to follow the principle of a European solution to contain risks; not surprisingly, the ECB has voiced a clear preference for such a solution.⁹⁰⁾ In addition, clearing houses would benefit from further legal and regulatory clarity to protect client funds.⁹¹⁾

4.1.4 Promoting trading on organized markets

The maximum use of trading on organized and especially regulated markets will be key to enhancing transparency and safeguarding the integrity of the derivatives market.

The same standards should govern the setup and activities of all derivatives marketplaces. Today, extensive standards are only in place for regulated markets; by contrast, OTC marketplaces⁹²⁾ are unregulated. Accordingly, rules on access, transparency, business continuity etc. must apply to all marketplaces following the principle of “same business = same rules”.

A large number of providers already offer derivatives trading. However, to promote trading on organized markets, active support is still required for standardization. As an additional means to enable trading on organized markets, it is important to ensure that market participants and end users have equal access to all trading venues.

4.2 Contributions of key stakeholders

The success of the market blueprint depends on the involvement of all stakeholders in the derivatives market. The common goal of increasing safety and integrity can only be achieved through a joint effort by public bodies and the industry.

Regulators and supervisors must lay the foundation for a safer derivatives market. In the US and the EU they have launched dedicated regulatory initiatives in this respect.⁹³⁾ It is decisive that these initiatives do not lose momentum. In areas with self-regulatory efforts, a potential statutory approach has to be considered in parallel in case self-regulation fails. However, under no circumstances should the regulatory burden on derivatives markets be excessive. Market participants and infrastructure providers should still have explicit incentives to trade products freely and continue to innovate.

89) On 17 February 2009, nine global CDS dealers (Barclays Capital, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JP Morgan Chase, Morgan Stanley, UBS) committed to start clearing all eligible CDS on European reference entities and indices by 31 July 2009; see ISDA 2009c.

90) See ECB 2008a.

91) See Alliance Bernstein et al. 2009.

92) Examples are electronic crossing networks or interdealer-brokers (often referred to as IDBs).

93) See Commission of the European Communities 2009a, US Department of the Treasury 2009.

Promoting the safety and integrity of derivatives markets also puts certain demands on supervision. Supervisors must ensure that they have the necessary capabilities and resources to monitor implementation of a safer derivatives market structure. It is important that both regulatory and supervisory changes are coordinated internationally to ensure a level playing field in the global derivatives market.

Market participants are central to the implementation of the derivatives market blueprint. They are the ones that benefit most from increased safety and integrity which are a prerequisite for successful and sustainable business development. Therefore, market participants should drive the standardization of derivatives products and related back-office processes. They should also proactively increase collateralization and the use of third-party providers. Market participants need to continue to closely collaborate with regulators and supervisors as well as infrastructure providers in this respect.

Finally, **infrastructure providers** should work with other stakeholders towards implementing the blueprint. Most importantly, providers need to expand their offerings to fill the current gaps in the market structure such as offering further CCP services or expanding the product scope for organized markets. They have to ensure that their services are sound and reliable. Processes and products (e.g. for CCP clearing) should be developed in close cooperation with market participants. This cooperation should also include smaller sell-side and buy-side market participants.

5 Conclusion

There is evident need to reform unregulated parts of the derivatives market. Regulators, supervisors and academics have identified deficiencies in the OTC derivatives market – particularly non-CCP-cleared and uncollateralized trading – that pose a threat to the stability of the financial system as a whole. Regulators should use the momentum that has built up over the course of significant bailouts and defaults of key players in the industry during the financial crisis to mobilize industry forces in an effort to increase safety and integrity in all areas of the derivatives market.

Above all, public intervention should aim to reduce and control systemic risk as much as possible. Here, merely introducing stricter regulatory and supervisory requirements will not suffice – the derivatives market needs a strengthened market structure that includes the imperatives of safety and integrity as built-in principles of sound market organization.

The blueprint proposed in this White Paper describes a rigorous target for such a strengthened market structure. While some elements of the blueprint can potentially be achieved through industry efforts, regulatory action is needed as well.

- Regulatory provisions need to ensure the mandatory registration of all derivatives contracts via CCPs or a central data repository.
- Economic incentives should exist so that a maximum of derivatives contracts are shifted to CCP clearing or, at the very least, to full collateralization of all non-CCP-cleared derivatives, ideally by neutral and independent collateral managers.

- Statutory target levels for standardization or degrees of automation will accelerate the shift of standardizable derivatives to central clearing or trading onto organized and in particular onto regulated markets.

In our opinion, the implementation of the blueprint is indispensable in order to minimize the systemic risk inherent in today's derivatives market structure and, thus, is an effective tool to ensure the stability of the financial system. While the proposals laid out in this White Paper are customized solutions for the derivatives market, we consider the principles suggested here as self-evident even for other areas of the financial market.

List of Exhibits

Exhibit 1: Overview of the financial instruments universe	6
Exhibit 2: Breakdown of the global derivatives market – OTC versus on-exchange and by underlying asset class	8
Exhibit 3: Current derivatives market structure	8
Exhibit 4a: Derivatives notional amount outstanding	10
Exhibit 4b: OTC derivatives gross market value	10
Exhibit 5: Net counterparty risk exposure and extent of collateralization within OTC market	13
Exhibit 6: Automation levels – share of electronically confirmed OTC derivatives transactions	16
Exhibit 7: Derivatives market – shift of status quo towards market blueprint	20
Exhibit 8: CCP risk management and mitigation – Eurex Clearing example	22
Exhibit 9a: Netting efficiency – multilateral (CCP) netting	23
Exhibit 9b: Netting efficiency – bilateral netting	23
Exhibit 10: Counterparty relations – complexity reduction through CCP clearing	24
Exhibit 11: Equity capital and collateral costs within OTC and CCP-cleared markets	25
Exhibit 12: Market blueprint – key elements provide safety and integrity of the derivatives market	27

Glossary

Asset-backed security A → security whose payments are linked to a portfolio of assets, such as receivables.

Bailout → Liquidity, loans and/or guarantees provided by central banks or government institutions to save financial institutions or companies from filing for insolvency.

Basel I & II International standard for banking regulators issued by the Basel Committee on Banking Supervision. Basel II uses a concept with three pillars describing a) minimum → capital requirements (see → regulatory capital), b) supervisory review processes and c) market discipline. Basel I is the previous international standard.

Bilateral Contract relationship between two market participants regarding trade, → collateral and/or → clearing agreements. Within a bilateral market organization all market participants have individually negotiated contract relationships with each other (see → multilateral).

Bond An instrument for borrowing funds on the capital market, where creditors' claims are vested/secured.

Broker A company acting as an intermediary between buyers and sellers of derivatives or → securities, effectively channelling → orders to the market for execution. For this service, brokers charge a commission. Pure brokers only act as agents on behalf of the trading parties (see → broker-dealer).

Broker-dealer A broker also acting as buyer or seller to transactions and thus becoming a principal party to a deal (often in the form of → market making). In the → OTC derivatives segment, broker-dealers usually act as → counterparty to end customers. As the broker-dealer – usually a large universal or investment bank – also assumes principal risk, commissions are higher than for pure brokerage.

Capital requirements See → regulatory capital.

Central counterparty (CCP) Legal entity that acts as an intermediary between the parties involved in a securities or derivatives trade and acts as the seller to every buyer and the buyer to every seller, minimizing the default risk and facilitating → netting, without revealing the buyer's or seller's identity.

Central data repository (CDR) Platform where data on traded derivatives contracts is registered and post-trade recordkeeping on contracts is enabled. A repository provides information on, for example, the number and value of outstanding contracts, the size of → counterparty risk or outstanding positions.

Central securities depository (CSD) An institution that acts purely as an agent performing → clearing, → settlement, custody, safekeeping and notary functions. In the derivatives arena, CSDs only provide their services in the rare case of physical settlement.

Certificate A structured and securitized product, e.g. in the form of a bearer bond, allowing an investor to participate in the performance of an → underlying. As → securities, certificates have to be differentiated from non-securitized derivatives. Certificates are almost exclusively traded by retail investors on specialized → exchanges such as Scoach or Euwax.

Clearing In the case of derivatives, the management of open derivatives positions including their → netting. Termination of derivatives contracts is also part of derivatives clearing and involves establishing final positions for → settlement. Mitigating the → counterparty risk on open derivatives positions is the most important aspect of derivatives clearing. As derivatives contracts can have very long lives, clearing plays a crucial role in the derivatives value chain and is considerably more complex than, for example, the clearing of cash equities.

Clearing fund One of the lines of defense of a clearing house. If one trading party cannot honour its obligations due to a default, these can be covered by the clearing fund (in the unlikely case that the other lines of defense, daily compensation of losses and → collateral, are not sufficient). Clearing members have to contribute capital to the clearing fund.

Clearing license A → clearing member must have a license to become a member of a clearing house (see → central counterparty). According to the licensing agreements, securities and money → settlement accounts are set up and obligations to pledge financial → collateral have to be fulfilled.

Clearing margin Margin posted by a member of a clearing house.

Clearing member Market participant holding a → clearing license. A clearing member may also act as a → general clearing member.

Close out (closing out) An → open position is offset (closed out) by executing a transaction that is equal and opposite to that which established the open position.

Collateral Financial or other tangible assets pledged by a borrower to secure an obligation. If the borrower defaults, the collateral is used to fulfill the obligation.

Collateral liquidation In the case of a → counterparty defaulting, the → central counterparty can – after → netting the claims and liabilities of the defaulted counterparty – liquidate pledged → collateral to close → open positions and secure payments.

Collateralization The use of → collateral to secure a transaction. In the derivatives market, collateralization plays an important role to manage → counterparty risk in the on-exchange (where collateral is pledged to → CCPs) and → OTC segments.

Collateralized debt obligation (CDO) A → security whose payments are linked to a portfolio of debt. Usually several classes (or tranches) of securities with different returns are created from a debt portfolio. Repayment differs for these classes if borrowers in the portfolio default on their debt. As securities, CDOs have to be differentiated from derivatives (contracts).

Collateralized loan obligation (CLO) A CDO whose payments are linked to a portfolio of loans. As → securities, CLOs have to be differentiated from derivatives (contracts).

Corporate A company such as an industrial company or non-financial services firm.

Counterparty The opposite party to a financial transaction. Normally the counterparty of the buyer of a contract is the seller of that contract. In the case of CCP-cleared derivatives, the clearing house acts as the → central counterparty to each party to a transaction, thereby removing → counterparty risk from the members.

Counterparty risk The risk that a → counterparty to a (derivatives) contract defaults and cannot (completely) fulfill its contractual obligations.

Coupon Covenant attached to a financial instrument entitling the holder to dividend or interest payments.

Credit default swap (CDS) A derivatives contract to transfer the → credit risk of → underlying debt instruments (mostly → bonds or loans). A CDS buyer receives credit protection. In the case of default, the buyer will be compensated by the CDS seller (the seller either has to buy the debt instrument at its face value or has to pay the difference between its face value and the reduced value in the case of default). In return for credit protection, the seller receives periodic payments from the CDS buyer.

Credit rating Creditworthiness of an institution or company describing its ability and willingness to pay outstanding positions. Credit ratings are assessed by rating agencies such as Moody's and Standard & Poor's.

Credit risk See → counterparty risk.

Default fund See → clearing fund.

Equity capital requirements See → regulatory capital.

Exchange See → regulated market.

Exchange-traded commodity (ETC) Security on individual commodities or commodities baskets that can be traded in the same way as a share on the exchange. Unlike → ETFs, ETCs are perpetual debt instruments that are secured by the relevant securities.

Exchange-traded fund (ETF) Mutual fund with indefinite maturity whose shares can be bought or sold in continuous trading on the exchange and which tracks the performance of the index on which it is based.

Exchange-traded note (ETN) Senior, unsecured, unsubordinated debt → security issued by an underwriting bank. The returns of ETNs are usually linked to the performance of a market benchmark or strategy, less investor fees.

Exotic underlying A non-standard → underlying to a derivatives contract such as weather indicators, freight rates or economic indicators (e.g. the unemployment rate).

Exposure Potential maximum loss. In derivatives transactions, exposure can be broken down into two components: a) the current → gross market value of the derivative, i.e. the amount that a counterparty would lose if the other counterparty defaulted today, and b) an add-on for potential future exposure to capture the risk of market value fluctuation.

Forward (contract) A derivatives contract for the delivery or receipt of a specific amount of an → underlying, at a set price, on a certain date in the future.

Future (or futures contract) A standardized derivatives contract for the delivery or receipt of a specific amount of an → underlying, at a set price, on a certain date in the future. Futures are traded on derivatives exchanges.

General clearing member (GCM) Clearing member holding a → clearing license that enables it to act as an intermediary for non-clearing members.

Gross market value The aggregate market value of several derivatives contracts calculated by summing up the positive market value of one side of each contract.

Gross risk exposure See → exposure.

Hedging Method of securing → open positions exposed to price risks by entering into a position with the opposite risk profile. For example, an existing portfolio can be hedged through the use of derivatives, such as → futures and → options.

Information asymmetry Unequal distribution of information, i.e. one market participant has more or better information than others.

Infrastructure Organizational structures needed for the financial market to function, e.g. → exchanges, → central counterparties or → settlement depositories.

Interconnectedness Degree to which market participants are linked to each other. In the case of a → bilaterally organized market, all market participants are highly interconnected as only vis-à-vis relationships exist.

Interdealer-broker An intermediary facilitating transactions between different → (broker-)dealers in the → OTC segment. In recent years, the interdealer-broker segment has significantly gained importance in the derivatives market and is now almost as large as the exchange segment in terms of revenues.

ISDA master agreement Model agreement for → OTC derivatives transactions developed by market participants led by the International Swaps and Derivatives Association (ISDA). The use of master agreements has significantly reduced the → legal risk in the OTC segment.

Jurisdiction Agreement on a legal authority in case of contractual questions within the lifetime of the derivatives contract.

Legal risk The risk that claims resulting from a derivatives contract are legally disputed and cannot be enforced.

Liquidity Ability to buy or sell a security at any point in time and in large volumes without substantially affecting its price.

Liquidity risk The risk that a derivatives contract cannot be closed at its fair value due to a lack of sufficient supply/demand in the market.

Margin → Collateral (cash or pledged security) deposited by the → clearing member to guarantee the fulfillment of a derivatives transaction and cover the risk exposure of the clearing house.

Margin deposit Cash or → securities deposited with a clearing house by trading parties of exchange-traded derivatives contracts. Margin deposits serve to protect the clearing house in case of trading parties defaulting. The amount of margin required is calculated in relation to the → market risk exposure of each trading party and covers the risk of adverse price changes that devalue the trading position.

Market maker A financial intermediary that offers to buy and sell → securities or derivatives by providing → quotes on a continuous basis. Thereby it is assured that parties wanting to trade find a → counterparty and → liquidity is ensured. Large universal and investment banks often act as market makers (see → broker-dealer).

Market risk The risk that the price of a derivative changes because the price of the → underlying changes. Participants in the derivatives market deliberately take on market risk → exposure.

Master agreement Framework agreement between two or more parties on a reference contract in each single OTC derivatives transaction, e.g. → ISDA master agreement.

Matching Automatic offsetting and execution of → orders in a trading system or automatic collection and comparison of trade data from dealers, → brokers and other market participants. Consistent trade data results in an immediate → trade confirmation that is legal and binding.

Maturity (maturity date) The date on which the final obligations defined in a derivatives contract are due.

MiFID European Union directive on markets in financial instruments (MiFID) which harmonizes the regulatory regime for investment services and activities within the member states of the European Union.

Mortgage-backed security (MBS) A → security whose payments are linked to a portfolio of debt. As securities, MBS have to be differentiated from derivatives (contracts).

Multilateral trading, → clearing or → settlement across a number of different market participants via market → infrastructure providers, e.g. → interdealer-brokers, → exchanges, → multilateral trading facilities, → clearing or settlement houses (see → bilateral).

Multilateral Trading Facility (MTF) A → public trading venue operated by an investment firm or a market → infrastructure provider that brings together the buying and selling interests of market participants.

Mutualization of losses Losses are born by all parties involved. For example, all clearing members of a → central counterparty cover the outstanding positions of a defaulted clearing member with their → collateral pledges and → clearing fund contributions.

Net counterparty risk exposure → Exposure of derivatives contracts after → netting the positions or obligations of trading partners or participants.

Netting Offsetting buy and sell positions over a given period of time so that market participants only have to settle the balance. One of the functions and advantages of the → CCP. If two parties agree to net their positions, this is called bilateral netting. → Central counterparties even allow the netting of three or more parties' positions, which is called multilateral netting.

Netting efficiency Degree to which opposite positions or obligations are offset among trading partners or participants to reduce exposure, the required settlements or payments.

Notional amount (outstanding) Value or nominal amount of the → underlying of a derivatives contract. It is therefore similar in nature to the market capitalization of bond or equity markets.

Novation Act of replacing a party to a contract with a new party. In the case of CCP-cleared derivatives, the → CCP steps into the derivatives contract and acts as a buyer to all sellers, and vice versa. Thus, the CCP is the universal counterparty to all contracts.

Open interest Open derivatives positions either measured in terms of contracts or in terms of value.

Open position See → open interest.

Operational risk The risk of deficiencies in information systems or internal controls, human error, or management failure resulting in unexpected losses.

Option (or options contract) A derivatives contract giving the buyer the right to buy (call) or sell (put) a specific quantity of a specific → underlying, at a fixed price, on, or up to, a specified date. The seller is obliged to sell or buy the asset if the option is exercised.

Order A contractually binding request to other market participants to buy or sell a specific quantity of a financial instrument at a defined price.

Order book Contains all current orders for a certain product at a derivatives exchange or an → OTC trading platform.

Organized market Multilateral trading venue for → OTC and exchange-traded derivatives. Organized markets comprise → regulated markets (i.e. derivatives exchanges), → multilateral trading facilities (MTFs) as well as electronic crossing networks or → interdealer-brokers for OTC derivatives. The term organized market is thus a broader term than → public trading venue, which is limited to → regulated markets and MTFs.

Organized trading venue See → organized market.

Over the counter (OTC) Transactions between two or more trading parties that are not conducted in a → regulated market. In the derivatives market, the OTC segment is by far the largest part of the market.

Price discovery (function) Process of finding the equilibrium price for assets and securities through the interaction of buyers and sellers within the market. Price discovery for exchange-traded financial instruments takes place continuously as bid and ask offers are channelled and therefore matched at all times.

Public trading venue A market system where buying and selling interests are brought together to enable a contract to be negotiated, meaning that → trade execution takes place under the market system's defined rules. The rules relate to market membership, admission of trading instruments, trading rules between members, reporting, and transparency obligations. Both → exchanges and → multilateral trading facilities are public trading venues in → MiFID terms.

Quote The simultaneous entry of a limit buy and limit sell → order for a derivatives product at an exchange or another electronic marketplace. → Market makers provide quotes, effectively establishing a market for a product.

Registration Centrally gathered information about a derivatives contract (see → central data repository).

Regulated market A → public trading venue that is subject to stricter → regulation and → supervision than → multilateral trading facilities, e.g. rules for trading instrument admission, trade controlling and reporting. → Regulated markets for derivatives are e.g. Eurex, CME and NYMEX.

Regulation A system of rules to influence market financial institutions, market → infrastructure providers and market mechanisms and, hence, to prevent market failures and breakdowns. Rules can be in the form of self-regulation agreements (e.g. → ISDA master agreement) or set by government authorities (e.g. Capital Requirement Directive, → MiFID).

Regulatory capital The capital that banks must maintain according to certain statutory rules (often based on the → Basel capital standards). The amount of regulatory capital required depends on the riskiness of the bank's assets. A bank active in the derivatives market must maintain certain regulatory capital to cover part of the → exposure (mostly in the form of → counterparty risk) from its → open positions.

Risk management Identification and valuation of risks that are linked to a derivatives contract. The probability of events involving risk is then minimized and controlled.

Risk mitigation Reducing the value at risk of derivative contracts, e.g. through → netting and → collateralization.

Security An investment instrument which offers evidence of debt or equity, usually issued by a corporation, government or other organizations.

Settlement Payment and delivery of a securities transaction. In the case of derivatives, the payment of cash to fulfill the obligation arising from a derivatives contract (cash settlement) or the payment of cash for an underlying and the delivery of the → underlying in return (physical delivery).

Spread Absolute or relative difference between the bid and ask limit of the issuer's → quote.

Standardization Contract standardization refers to the process of defining uniform contract clauses, e.g. standardized clauses on maturities, → coupons, → settlement/netting rules and → jurisdictions. Process standardization covers the organizational and technical alignment of → trade execution, → clearing, and settlement processes across the financial industry.

Supervision Controlling market participants, market → infrastructure providers and market mechanisms according to predefined standards or → regulations. Controlling can be processed in the form of self-assessment or by government authorities.

Swap (contract) A derivatives contract under which the two → counterparties agree to exchange cash flows at future dates as stipulated in the contract.

Systemic risk The risk that the failure of one market participant has adverse effects on other participants, destabilizing the market as a whole.

Third-party collateral manager Custodian responsible for handling, safekeeping, monitoring and managing securities on deposit. In addition, the collateral manager can be responsible for valuing the securities in order to pledge these as → collateral.

Total exposure See → exposure.

Trade confirmation Information on trades sent to market participants after the execution and matching of trades, e.g. trade number, trading contract, and trade price.

Trade execution Purchase or sale of a financial instrument on an → exchange or → multilateral trading facility. Trades are executed by market participants, either on behalf of their customers or for their own account.

Trade repository See → central data repository.

Underlying The financial instrument, physical asset or variable upon which a derivatives contract is based.

Warrant A securitized form of a standardized → option. Warrants are almost exclusively traded by retail investors on specialized → exchanges such as Scoach or Euwax.

References

- AIG – American International Group Inc. 2009a:**
AIG – Is the Risk Systemic?
- AIG – American International Group Inc. 2009b:**
AIG Discloses Counterparties to CDS, GIA and Securities Lending Transactions.
- Allen, F./Carletti, E. 2008:** Financial System: Shock Absorber or Amplifier?, Monetary and Economics Department, BIS Working Paper.
- Alliance Bernstein et al. 2009:** Report to the Supervisors of the Major OTC Derivatives Dealers on the Proposals of Centralized CDS Clearing Solutions for the Segregation and Portability of Customer CDS Positions and Related Margin.
- Basel Committee on Banking Supervision 2008:**
Principles for Sound Liquidity Risk Management and Supervision.
- Bernanke, B.S. 2008:** Reducing Systemic Risk, Federal Reserve Bank of Kansas City's Annual Economic Symposium.
- Bienert, H. 1996:** Der Marktprozess an Aktienbörsen [The Market Process of Stock Exchanges].
- BIS – Bank for International Settlements 1998:**
International Convergence of Capital Measurement and Capital Standards – July 1988, updated April 1998.
- BIS – Bank for International Settlements 2005a:**
International Convergence of Capital Measurement and Capital Standards – A revised framework updated 2005.
- BIS – Bank for International Settlements 2005b:**
The Application of Basel II to Trading Activities and the Treatment of Double Default Effects.
- BIS – Bank for International Settlements 2007:**
Financial System and Macroeconomic Resilience, Monetary and Economic Department, Sixth BIS Annual Conference.
- BIS – Bank for International Settlements 2009a:**
BIS Quarterly Review June 2009 – Statistical Annex.
- BIS – Bank for International Settlements 2009b:**
BIS Quarterly Review June 2009 – International Banking and Financial Markets Developments.
- Bliss, R./Kaufman, G.G. 2006:** Derivatives and Systemic Risk: Netting, Collateral, and Closeout, Journal of Financial Stability.
- Bliss, R./Papathanassiou, C. 2006:** Derivatives Clearing, Central Counterparties and Novation: The Economic Implications.
- Carmichael, J./Pomerleano, M. 2002:** The Development and Regulation of Non-Bank Financial Institutions, The World Bank.
- CCP12 2009:** Central Counterparty Default Management and the Collapse of Lehman Brothers.
- Clark, R. 2009:** Testimony Before the Subcommittee on Capital Markets, Insurance, and Government Sponsored Enterprises – United States House of Representatives.
- Commission of the European Communities 2009a:**
Communication from the Commission – Ensuring Efficient, Safe and Sound Derivatives Markets.
- Commission of the European Communities 2009b:**
Commission Staff Working Paper – Ensuring Efficient, Safe and Sound Derivatives Markets.

Deutsche Börse Group 2008: The Global Derivatives Market – An Introduction.

Domowitz, I./Steil, B. 2002: Innovation in Equity Trading Systems: The Impact on Transactions Costs and Cost of Capital, Technological Innovation and Economic Performance, in: Steil, B., Victor, D., Nelson, R. (Eds.), Technological Innovation and Economic Performance, Princeton University Press.

Dow Jones 2008: Revaluation Services for OTC Derivatives See Heavy Demand.

DTCC – The Depository Trust & Clearing Corporation 2008: DTCC and Markit to Form Strategic OTC Derivatives Partnership.

ECB – European Central Bank 2008a: Decisions Taken by the Governing Council of the ECB – December 2008.

ECB – European Central Bank 2008b: Financial stability review, June 2008.

FSA – Financial Services Authority 2009: The Turner Review – A Regulatory Response to the Global Banking Crisis.

Geithner, T.F. 2008: Systemic Risk and Financial Markets, Committee on Financial Services.

Group of Thirty 2009: Financial Reform – A Framework for Financial Stability.

Hrovatin, S./Levin, M./Nava, M./Planta, F. 2009: Financial Regulation and Financial Crisis: Lessons Learned and the Way Forward, in: Swiss Derivatives Review – Issue 39 Spring 2009.

Hull, J.C. 2008: Options, Futures, and Other Derivatives – Seventh Edition, Prentice Hall.

IOSCO – International Organization of Securities Commission 2009: Unregulated Financial Markets and Products – Consultation Report.

ISDA – International Swaps and Derivatives Association 2005: 2005 ISDA Collateral Guidelines.

ISDA – International Swaps and Derivatives Association 2009a: ISDA Margin Survey.

ISDA – International Swaps and Derivatives Association 2009b: Survey of Derivatives Usage by the World's 500 Largest Companies.

ISDA – International Swaps and Derivatives Association 2009c: Clearing of CDS in a European Clearing House.

Larosière, J.D. 2009: The High-level Group on Financial Supervision in the EU.

Lehman Brothers International (Europe) – in Administration 2009: Joint Administrators' Progress Report for the Period 15 September 2008 to 14 March 2009.

Levine, R. 1997: Financial Development and Economic Growth: Views and Agenda, Journal of Economic Literature.

Markit 2009: Quarterly Metrics Report – Quarterly Trend Report March 2009.

Mayhew, S. 2000: The Impact of Derivatives on Cash Markets: What Have We Learned, University of Georgia Working Paper.

Merton, R.C. 1995: Financial Innovation and the Management and Regulation of Financial Institutions, Journal of Banking & Finance.

NY FED – Federal Reserve Bank of New York 2009: New York Fed Welcomes Further Industry Commitments on Over-the-Counter Derivatives – June 2009.

OCC – Office of the Comptroller of the Currency 2009: OCC's Quarterly Report on Bank Trading and Derivatives Activities Fourth Quarter 2008.

Schroth, E.J./Herrera, H. 2003: Profitable Innovation without Patent Protection: The Case of Derivatives, Instituto Tecnológico Autónomo de México (ITAM) – Centro de Investigacion Economica Working Paper.

Shefrin, H./Statman, M. 1993: Ethics, Fairness and Efficiency in Financial Markets, Financial Analysts Journal.

Sutherland 2009: Avoiding “Documentation Disadvantages” in OTC Derivatives Collateral Valuation Disputes.

Thompson, L. E. 2009: Testimony Before the Subcommittee on Capital Markets, Insurance, and Government Sponsored Enterprises – Hearing on “Effective Regulation of the Over-the-Counter Derivatives Markets”.

Tobin, J. 1984: On the Efficiency of the Financial System, Lloyd's Bank Review.

Tumpel-Gugerell G. 2009: Beyond the Turmoil: Rules, Supervision and Infrastructures.

US Department of the Treasury 2009: Financial Regulatory Reform – A New Foundation, White Paper.

Wall Street & Technology 2008: Buy Side Seeks Independent Valuation Providers for OTC Derivatives After Credit Crisis.

Wellink, N. 2008: Financial Sector Integrity, Basel Committee on Banking Supervision, at the Symposium about Integrity.

List of Abbreviations

ABS	Asset-backed security	IDB	Interdealer-broker
AIG	American International Group Inc.	IOSCO	International Organization of Securities Commission
BBA	British Bankers' Association	ISDA	International Swaps and Derivatives Association
BIS	Bank for International Settlements		
BM & F		MBS	Mortgage-backed security
Bovespa	Brazilian securities, commodities and futures exchange	MiFID	Markets in Financial Instruments Directive
		MTF	Multilateral trading facility
CCP	Central counterparty	NYMEX	New York Mercantile Exchange
CDO	Collateralized debt obligation	OCC	Options Clearing Corporation
CDR	Central data repository	OTC	Over-the-counter
CDS	Credit default swap	ROE	Return on equity
CESR	Committee of European Securities Regulators	UCITS	Undertakings for collective investments in transferable securities
CETIP	Latin American OTC clearing house and CSD	US	United States of America
CFD	Contract for difference	WFE	World Federation of Exchanges
CLO	Collateralized loan obligation		
CME	Chicago Mercantile Exchange		
CSD	Central securities depository		
CVM	Comissão de Valores Mobiliários		
DTCC	Depository Trust & Clearing Corporation		
ECB	European Central Bank		
ETC	Exchange-trade commodity		
ETF	Exchange-traded fund		
ETN	Exchange-traded note		
EU	European Union		
FED	Federal Reserve		
FIA	Futures Industry Association		
FSA	Financial Services Authority		
GDP	Gross domestic product		



Mixed Sources

Product group from well-managed
forests and other controlled sources
www.fsc.org Cert no. IMO-COC-028465
© 1996 Forest Stewardship Council

Published by

Deutsche Börse AG
60485 Frankfurt/Main
Germany
www.deutsche-boerse.com

Eurex Frankfurt AG
60485 Frankfurt/Main
Germany
www.eurexchange.com

Phone +49-(0) 69-2 11-0

September 2009
Order number 9010-2900

Reproduction – in total or in part –
only with the written permission of
the publisher

iTraxx® is a registered trademark of
International Index Company Ltd.

Contact

Dr Stefan Mai
E-mail
stefan.mai@deutsche-boerse.com

Additional copies of this brochure
may be obtained from the Publications
Hotline:
Phone +49-(0) 69-2 11-1 15 10
Fax +49-(0) 69-2 11-1 15 11